



**2006 EDITION
Version 10**

UNIT MOVEMENT

OFFICER DEPLOYMENT PLANNING COURSE



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DEPLOYMENT OVERVIEW

UMODA01

TBOLC 500-500-16

MWOBC 882X1B01



1

References

FM 3-35.4, *Deployment Fort-to-Port*

FM 4-01.011, *Unit Movement Operations*

FM 100-17, *Mobilization, Deployment, Redeployment, Demobilization*

FM 100-17-3, *Reception, Staging, Onward Movement, and Integration*

FM 100-17-5, *Redeployment*

FORSCOM/ARNG Regulation 55-1, *Unit Movement Planning*

FORSCOM Regulation 55-2, *Unit Movement Data Reporting*

2

Next Crisis? War?



3

Past Defense Strategy

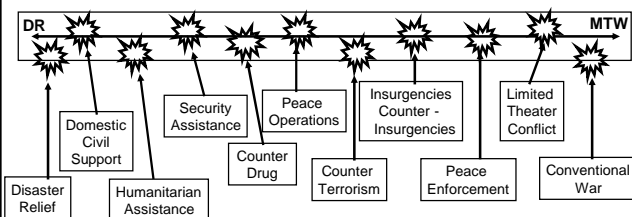
- Focused on deterring Soviet aggression in Europe
 - Army forward deployed
 - Pre-positioned equipment & supplies in theater
 - Round out & reinforcing units from CONUS to European theater



4

Current National Security Challenges

- Based on potential threats to US security.
These threats cover the full spectrum of Ops:



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Military Capabilities Supporting Defense Strategy

- Reduced forward-deployed forces in peacetime
- Project power quickly in war & crisis

Strategic Deployment is a critical enabling capability for executing U.S. defense capabilities

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Power Projection

- Ability to apply some or all of national power elements - political, economic, informational or military - to rapidly and effectively deploy & sustain forces in multiple locations, in response to crisis
- Project power quickly in war & crises
- Provides national leadership with crises options

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Power Projection (Cont)

- Ability depends on speed to assemble US forces at required locations
- Power projection not new
 - Frequency increased since the end of the Cold War
- Problems meeting timelines

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Strategically Responsive Force



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What is Force Projection?

A military element of national power

The demonstrated ability to alert, mobilize, deploy rapidly, and operate effectively anywhere in the world

Rapid force deployment = credible power projection

Ref: FM 3-35.5 p.1-1

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Force Projection

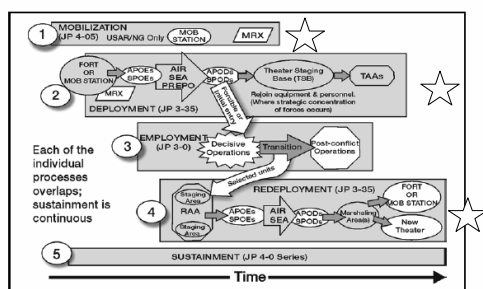


Figure 1-1. Force Projection Process

Ref: FM 3-35.5 pp.1-1 to 1-3

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**Mobilization, Deployment,
Redeployment, and
Demobilization
(MDRD)
FM 100-17**

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Mobilization

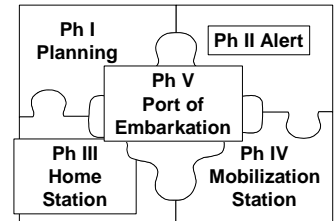
- Mobilization brings Armed Forces to state of readiness for war or national emergency
- Includes activating all or part of the Reserve Component
- Mobilization is process that provides the supported commander with:
 - Forces (units)
 - Manpower (individuals)
 - Logistics support

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Mobilization Phases

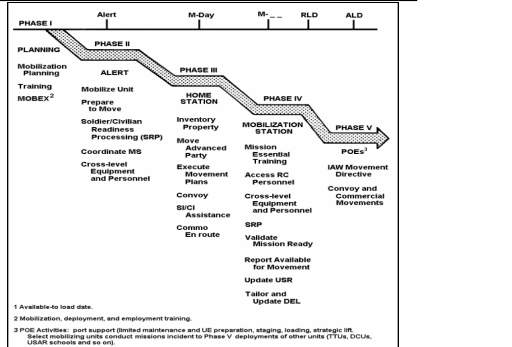
- Mobilization is a concurrent & continuous operation - not a sequential process

Five Phases



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Mobilization Phases (Cont)



Ref: FM 100-17 Figure 3-2 (p.3-5)

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Deployment

- Element of the force projection process that comprises the movement of forces and material, and their sustainment, from their point of origin to a specific area of operation (AO)
- Deployment includes movement:
 - From CONUS to location needed (whether that be OCONUS or within CONUS)
 - From OCONUS to location needed
 - Between theaters of operation in the same AOR

Ref: FM 3-35.5 p.1-3

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Deployment Phases

- ☆ Pre-deployment Activities
- ⌚ Movement to and activities at the port of embarkation (POE): FORT-TO-PORT
- ⌚ Movement to the port of debarkation (POD): PORT-TO-PORT



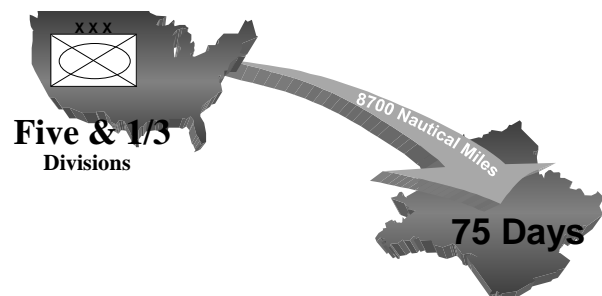
⌚ Reception, staging, onward movement & integration (RSOI): PORT-TO-DESTINATION



Ref: FM 3-35.5 p.1-4

17

Old Deployment Objective



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New Deployment Objective

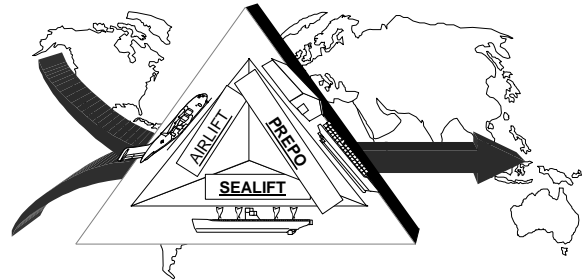


General Shinseki
Retired CSA

Army Goal: With the right technological solutions ... allow U.S. to put a combat capable **brigade** anywhere in the world in **96 hours** after liftoff, a **division** on the ground in **120 hours**, and **five divisions** in **30 days**
FM 3-35.4 p.1-1

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Strategic Mobility Triad

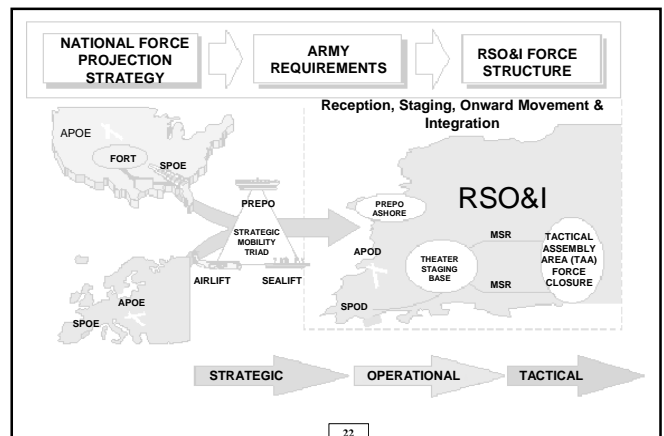


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Army Prepositioned Stocks (APS)

- APS reduces strategic lift requirements & increases force responsiveness
- Consists of stocks in theater and on vessels
- APS concept is forces draw APS after arriving at the APOD
- APS Afloat vessels strategically located around the globe
- APS Land in Korea, Europe, Southwest ASIA

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Deployment Responsibilities - National Level

Sole Authority to Order Deployment of Military Forces

Commander in Chief
President



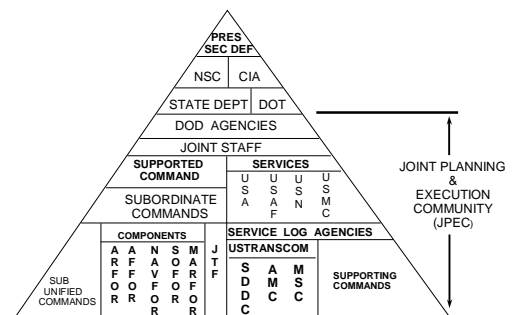
SECDEF
Secretary of Defense
Assigns Combat Forces



Chairman of the Joint Chiefs of Staff
Principle Military Advisor

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Joint Planning & Execution Community (JPEC)



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JPEC - Joint Chiefs of Staff (JCS)

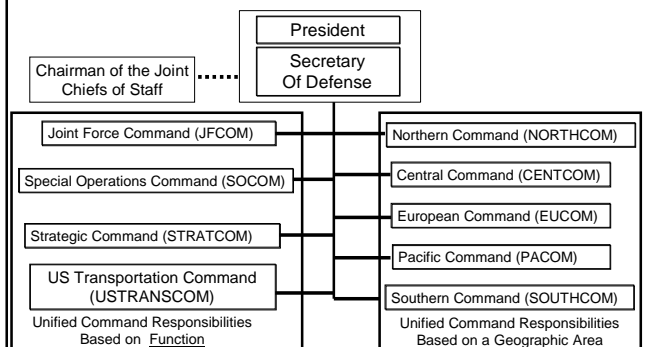
JCS Deployment Related Functions



- Provides strategic direction to the armed forces
- Provides framework for preparing & reviewing contingency plans
- Provides deployment guidance

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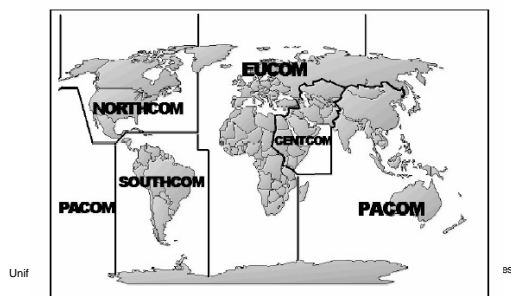
JPEC - Unified Combatant Commands



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Unified Combatant Commands (Cont)

The World with Commanders' Areas of Responsibility



Unif

95

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JPEC - US Transportation Command (USTRANSCOM)

- USTRANSCOM: Provides DOD common user air, land & sea transportation & port management



United States
Transportation
Command



Air
Mobility
Command



Military
Sealift
Command



MILITARY
SURFACE
DEPLOYMENT &
DISTRIBUTION
COMMAND

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Air Mobility Command (AMC)

- Provides strategic airlift
- Designates Aerial Ports of Embarkation (APOE)
- Manages the Civil Reserve Air Fleet (CRAF)



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Military Sealift Command (MSC)

- Pre-positioned shipping
- Sealift Program and surge shipping
- Manages the Ready Reserve Fleet



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Military Surface Deployment And Distribution Command (SDDC)

- Management of DOD surface transportation (land and sea) shipments
- Designates and operates Seaports of Embarkation (SPOE) and is the DOD single port manager
- Transportation Engineering Agency (SDDC TEA)



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Redeployment

- The transfer of units, individuals or supplies deployed in one area:
 - to another area for employment
 - to home station/installation
- Redeployment to another theater to continue military operations - RSO&I in new theater
- Redeployment to home station/installation in CONUS or overseas theater - focus on reception & onward movement

Ref: FM 100-17-5 p.1-1

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Redeployment Phases

- Phase I: Recovery and reconstitution, and pre-redeployment activities
- Phase II: Movement to and activities at the POE
- Phase III: Movement to the POD
- Phase IV: Reception, Staging, Onward Movement & Integration (RSO&I)



Ref: FM 100-17-5 p.1-2

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Demobilization

- Process for transferring forces, individuals, & materiel from active to reserve status
- Focuses primarily on demobilization of units & individuals
- Desired outcome is to restore Army capabilities to conduct future operations

Ref: FM 100-17 p.6-0

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Demobilization Phases

- Phase I: Demobilization Planning Actions
- Phase II: Area of Operations Demobilization Actions
- Phase III: POE to CONUS Demobilization Station
- Phase IV: Demobilization Station Actions
- Phase V: Home Station Actions

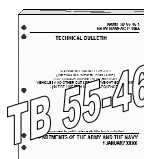
Ref: FM 100-17 pp.6-1/2

35

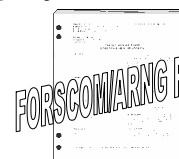
Deployment Planning -- Strategic Deployment Challenge

Is the plan transportation feasible??

movement criteria



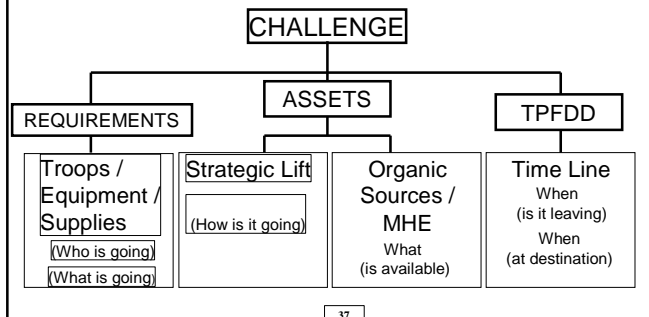
TB 55-46-1



FORSCOM/ARNG REG 55-1

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Strategic Deployment Challenge (Cont)

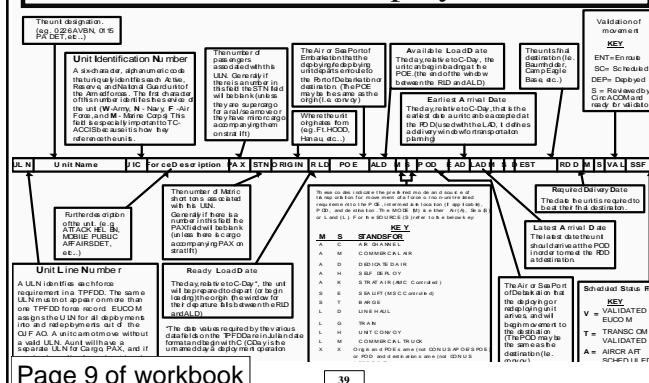


Time Phased Force Deployment Data

- Time Phased Force Deployment Data (TPFDD) is a computer generated listing of time phased force data (units, non-unit cargo and personnel) and movement data for a specific operational plan
- All dates are from C-Day (Commence Movement From Origin Day)

Ref: FORSCOM/ARNG Reg 55-1, p.130 and FM 4-01.011, p.2-3

Time Phased Force Deployment Data



ULN - Microsoft Internet Explorer

Address: http://relant.technetknowledge.com/CPH2/SourceMaterial/ULN.html

ULN	S	UTC	ULC DESCRIPTION	ULC	UNIT	ORIG	CC
TAEAC	A	4YD77	BN	ENGR BN HVY DIV	WA0GAA	ENGR BN HVY DIV	HKUZ 13
TAEAC	A	4YD77	BN	ENGR BN HVY DIV	WA0GAA	ENGR BN HVY DIV	HKUZ 13
TAEBC	A	16WVV	BN	FA BN 155 SP HVY DIV	WA2SAA	FA BN 155 SP HVY DIV 3/8	HKUZ 13
TAEBC	A	16WVV	BN	FA BN 155 SP HVY DIV	WA2SAA	FA BN 155 SP HVY DIV 3/8	HKUZ 13

Unit Line Number (ULN): Code that describes a unique increment of a unit, eg used to identify the advance party or a unit going by air when the unit main body and equipment are moving via sealift. Enables element to be identified separately in movement planning for any specific transportation segment

Unit Identification Code (UIC): six-character alphanumeric code that uniquely identifies each Active, Reserve and National Guard unit of the Armed Forces

Ref: FM 4-01.011, pp.2-3

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ULN - Microsoft Internet Explorer

Address: http://relant.technetknowledge.com/CPH2/SourceMaterial/ULN.html

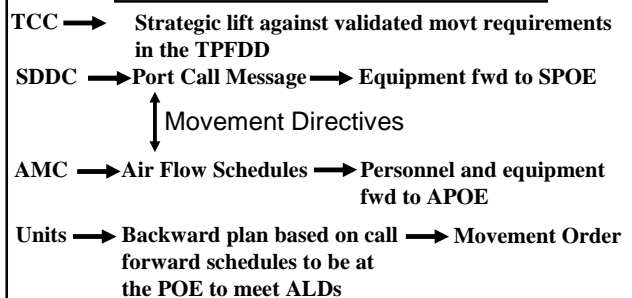
Ready-To-Load Date (RLD): Date when a unit must be prepared to depart its origin (installation for AC and Mobilization Station for RC)

Available-to-load date (ALD): When the unit must be ready to load an aircraft or ship at the POE

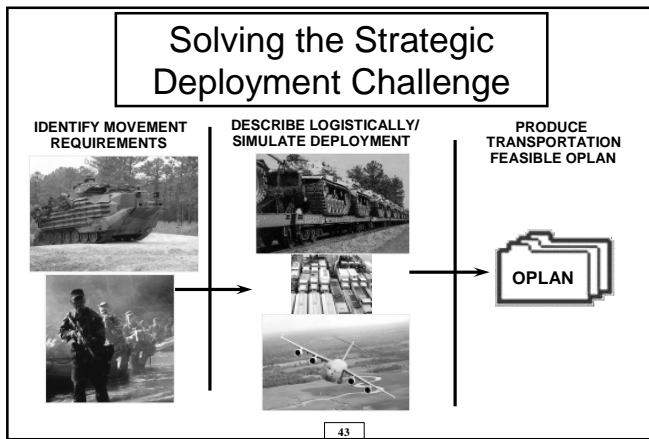
Earliest arrival date (EAD): Earliest date on which a unit, a resupply shipment, or replacement personnel, can be accepted at a POD during a deployment. Latest arrival date (LAD): Latest date on which a unit, a resupply shipment, or replacement personnel, can be accepted at a POD to support the concepts of operations. EAD and LAD (both specified by the supported combatant commander) define a delivery window for Required delivery date (RDD): The date (specified by the supported combatant commander) by which a unit, resupply shipment, or replacement personnel, must have arrived at the POD and completed offloading to support the concept of operations

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ORDERS SEQUENCE

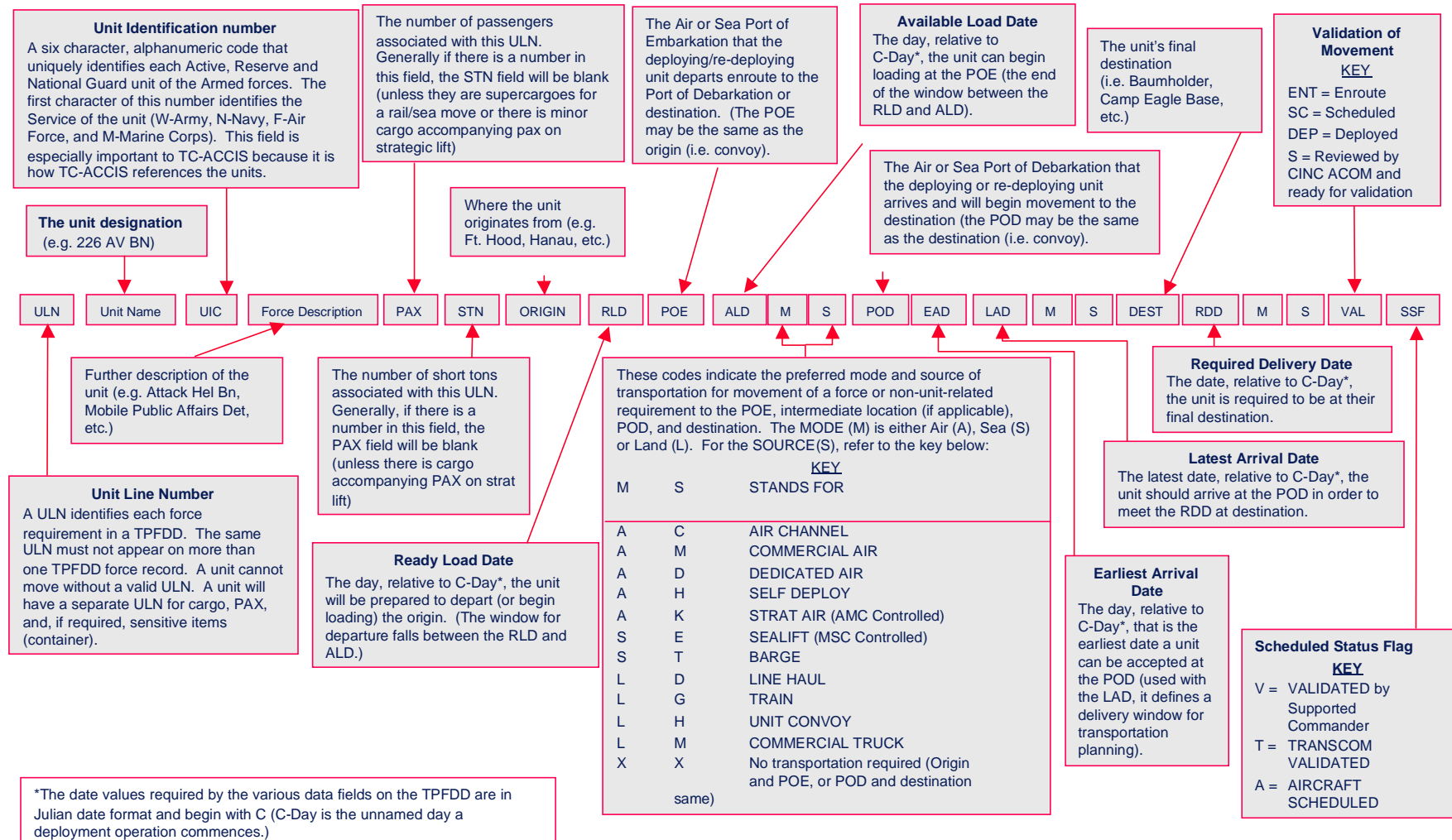


Ref: FORSCOM/ARNG Reg 55-1, pp.21-22 and FM 4-01.011, p.2-4



Time Phased Force Deployment Data

TPFDD



FORMAT_ NAME: DD173

25830

DISTRIBUTION:

DRAFTERS NAME: NJ NEWELL, CPT, OPNS OFFICER

DRAFTERS OFFICE: MTDSC-OPS-C 878-8572

RELEASERS_NAME: JOHN HALL, LTC, COC, MTDC-OPS-C

SPECIAL INSTRUCTIONS:

PAGE_OF:

DTG: 301459Z

MONTH: MAR

YEAR: 00

PRECEDENCE ACTION: RR

PRECEDENCE_INFO:RR

CLASS: UUUU

FL12A_DUMMY:

SPECAT:

LMF: AA

CIC: ZYUW

OMI:

BOOK: NO

MSG_HANDLING:

FROM: MTMCDSC FT EUSTIS VA//MTDSC-OPS-O//

TO: COM TWO TWO NCR LITTLE CREEK VA//R33//

: NMCB FIVE//S3//

: CG II MEF CAMP LEJEUNE NC//G3/G4//

: MARFORLANT NORFOLK VA//G4/G4 ENG//

INFO

: CDR FORSCOM FT MCPHERSON GA//AFLG-P2L-T/AFOP-OCD//

: CDR MTMC FALLS CHURCH VA//NTOP-O/MTPL//

: CDR MTMC DSC FT EUSTIS VA//MTDC-OPS-C/ /

: COMSC WASH DC

: CINCTRANS SCOTT AFB IL//TCJD3/4//

: CDR 597TH TRANSPORTATION GROUP SUNNY POINT NC

: CDR 832D TRANSPORTATION BATTALION FT BUCHANANAN PUERTO RICO

XMT:

ACCT:

TEXT: UNCLAS

SUBJECT: PORT CALL FOR SURFACE DEPLOYMENT IN SUPPORT OF NH ANTIGUA.

A. FM 55-65 PREPARATION FOR UNIT MOVEMENT OVERSEAS BY SURFACE TRANSPORTATION

DATED 30OCT95

B. FORSCOM/ARNG REGULATION 55-1 UNIT MOVEMENT PLANNING DATED 1OCT97

C. DOD 4500.32R MILITARY STANDARD TRANSPORTATION AND MOVEMENT PROCEDURES

(MILSTAMP) DATED 15MAY95

D. DOD REG 4500.9-R, PART II, CARGO MOVEMENT 25JUN89

E. CODE OF FEDERAL REGULATIONS (CFR) TITLE 49 HAZARDOUS MATERIAL TRANSPORTATION

F. INTERNATIONAL MARITIME DANGEROUS GOODS CODE (IMDGC)

1. THIS CONSTITUTES THE CALL FORWARD OF ALL EQUIPMENT SCHEDULED FOR SURFACE DEPLOYMENT THROUGH MOREHEAD CITY, NC AND ROOSEVELT ROADS, PUERTO RICO IN SUPPORT OF NH ANTIGUA. STRICT ADHERENCE TO UNIT SEAPORTS OF EMBARKATION (SPOE) ARRIVAL DATES IS REQUIRED. DEVIATIONS TO THIS SCHEDULE ARE NOT AUTHORIZED UNLESS APPROVED BY THIS HQ. THE ASSIGNED TAC CODES ARE YMNH (MARINES) AND YNNH (NAVY).

2. FOR LOAD OUT OF MOREHEAD CITY, NC:

UIC	UNIT NAME	HOME STATION	ARRIVAL DATES	
			NET	NLT
ABC123	XYZ 789	FT SWAMPY, NC	17APR00	18APR00
CBA321	ZYX 987	SWAMPY PORT, MI	17APR00	18APR00

FOR LOAD OUT OF ROOSEVELT ROADS, Puerto Rico:

		ARRIVAL	DATES
		NET	NLT
BAC213	YZX 897	ROOSEVELT ROADS,PR	29APR0 30APR00

3. ALL EQUIPMENT FOR EXPORT SHOULD BE CONSIGNED TO:

A. MOREHEAD CITY, NC

1. CDR, 597TH TRANSPORTATION GROUP
SOUTHPORT, NC 28409

ATTN: BRENDA HEWITT, CML (910) 457-8265, DSN 488-8265

2. FAX CONSIGNEE COPIES OF GBLs TO: CML {910} 457-8403, DSN 488-8403

B. ROOSEVELT ROADS, PUERTO RICO

1. CDR, 832D TRANSPORTATION BATTALION

39 FRANCIS ST

AMELIA INDUSTRIAL PARK

GUAYANABO, Puerto Rico 00968

ATTN: MR. OLIVERAS, CML (787) 749-4327

2. FAX CONSIGNEE COPIES OF GBLs TO: CML (787) 749-4350

4. UNITS MUST COORDINATE SHIPMENT REQUIREMENTS WITH THEIR TRANSPORTATION OFFICE

TO ENSURE ARRANGEMENTS HAVE BEEN MADE TO MOVE DEPLOYING CARGO TO THE PORT.

TRANSPORTATION OFFICERS REQUIRING COMMERCIAL LINE HAUL SUPPORT SHOULD CONTACT MTMC DSC, INLAND TRAFFIC, EVERETT BONO, DSN 927-8671, CML (757) 878-8671, FAX X7987.

5. CARGO MUST ARRIVE AT THE SEAPORT OF EMBARKATION (SPOE) PREPARED IAW REFS A THROUGH

F. THIS MESSAGE HIGHLIGHTS PREPARATION AND REPORTING ISSUES THAT MAY REQUIRE SPECIAL

ATTENTION TO ENSURE SAFE CARGO TRANSIT AND PROPER ACCOUNTABILITY.

6. CARGO ACCOUNTABILITY:

A. CARGO REQUIRING SEALIFT MUST BE DOCUMENTED USING MILITARY SHIPPING

LABELS (MSL) CODE TECHNOLOGY. MILITARY SHIPPING LABELS WILL BE PRINTED BY THE UNIT'S TRANSPORTATION OFFICE AND MUST BE AFFIXED TO CORRESPONDING EQUIPMENT PRIOR TO DEPARTURE FROM HOME STATION.

B. DEPLOYING UNITS MUST RECEIVE TWO SETS OF LABELS. A DEPLOYMENT AND REDEPLOYMENT SET. FOR EACH PIECE OF CARGO REFLECTED ON THEIR DEPLOYMENT EQUIPMENT LIST (DEL). LABELS MUST REFLECT THE UNIT IDENTIFICATION CODE (UIC), SHIPMENT UNIT NAME, MODEL NUMBER, AND DIMENSIONAL DATA AS PROVIDED ON THE DEL. LABELS FOR MILITARY VEHICLES MUST BE APPLIED UNIFORMLY. LABELS MUST BE PLACED ON THE LEFT SIDE OF THE FRONT BUMPER AND ON THE DRIVER'S SIDE DOOR. CORRESPONDING LOCATIONS MUST BE USED FOR EQUIPMENT WITHOUT BUMPERS EQUIPMENT BUMPERS OR DOORS. EQUIPMENT MUST BE MARKED ON THE FRONT AND REAR BUMPERS WITH THE UIC AND SHIPMENT UNIT NUMBER AS PROVIDED ON THE DEL. ANY OTHER SIMILARLY CONSTRUCTED NUMBERS FROM PREVIOUS DEPLOYMENTS MUST BE REMOVED TO AVOID CONFUSION. THIS PROCEDURE APPLIES TO BOTH THE DEPLOYMENT AND REDEPLOYMENT.

C. AN ACCURATE DEL IS ESSENTIAL FOR TRANSPORTATION PLANNING. ANY ITEM NOT ACCURATELY REPORTED WILL BE CONSIDERED FRUSTRATED CARGO AT THE PORT. FRUSTRATED CARGO WILL ONLY BE SHIPPED ON A "SPACE AVAILABLE BASIS." MAJOR UNIT COMMANDS NEED TO PROVIDE LNOS TO THE PORT POC TO FACILITATE MOVEMENT OF FRUSTRATED CARGO.

7. HAZARDOUS/SENSITIVE/CLASSIFIED CARGO:

A. THE MTMC PORT WILL USE THE DEL AS THE ADVANCE CARGO MOVEMENT DOCUMENTATION. THE UNIT IS RESPONSIBLE FOR COORDINATING WITH THE INSTALLATION TRANSPORTATION OFFICER FOR INPUTTING THE DEL INTO TC-ACCIS, UNLESS PRIOR ARRANGEMENTS ARE MADE WITH THE TERMINAL IF THE UNIT DOES NOT HAVE ACCESS TO TC-ACCIS, ATCMDS MUST BE GENERATED MANUALLY IAW REF (C). SENSITIVE ITEMS ARE IDENTIFIED BY COMMODITY CODE IN THE DEL. A DD FORM 1907, SIGNATURE AND TALLY RECORD, WILL ACCOMPANY THE GBL TO CREATE A "CHANGE OF CUSTODY" IAW REF D.

B. TRANSPORTATION OF SENSITIVE AND CLASSIFIED EQUIPMENT MUST BE MADE IAW THE SECURITY STANDARDS OUTLINED IN REF D.

C. CREW SERVED WEAPONS MUST BE REMOVED FROM VEHICLES AND PLACED IN A LOCKED CONTAINER WITH A SECURITY SEAL.

D. HAZARDOUS CARGO:

(1) HAZARDOUS CARGO MUST BE SEGREGATED AND LABELED IAW REFS E AND F. FOR EXAMPLE: FLAMABLES MUST BE SEGREGATED FROM OXIDIZERS. OXYGEN AND ACETYLENE CYLINDERS MUST BE REMOVED FROM THE VESICLES AND STRAPPED TO SEPARATE WOODEN PALLETS. THE PREFERRED METHOD FOR TRANSPORTING ACETYLENE CYLINDERS REQUIRES SECURING THEM TO A PALLET IN A HORIZONTAL POSITION (SADDLE METHOD).

(2) IAW REF (E), THE REVISED DD FORM, 836 DATED JAN 00, MUST BE USED TO DOCUMENT HAZARDOUS MATERIAL LOADED ON ORGANIC VEHICLES. UNIT EQUIPMENT CONTAINING HAZMAT ARRIVING AT THE PORT WILL REQUIRE THE FOLLOWING DOCUMENTATION :

(A) A COMPLETED DD FORM 836 FOR EACH VEHICLE/CONTAINER/EQUIPMENT SHIPPED OR CONVOYED. THE DD FORM 836 MUST BE VISIBLE AND COMPLETED WITH FOUR (4) COPIES. FOR CONTAINERIZED CARGO, ONE COPY WILL BE RETAINED BY THE CERTIFYING UNIT/INSTALLATION, ONE WILL BE PLACED INSIDE THE CONTAINER OR PACKAGE, ONE COPY WILL BE AFFIXED TO THE OUTSIDE OF CONTAINER OR PACKAGE, AND ONE COPY WILL BE PROVIDED TO THE PORT. FOR VEHICLES, ONE COPY WILL BE RETAINED BY THE CERTIFYING UNIT/INSTALLATION. TWO COPIES WILL BE ON THE VEHICLES, AND ONE COPY WILL BE PROVIDED TO THE PORT.

(B) FOR VEHICLES/EQUIPMENT SHIPPED COMMERCIALY, A COMPLETED DD FORM 836 SHOULD BE FILLED OUT FOR EACH PIECE OF EQUIPMENT SHIPPED OR CONVOYED.

(C) FOR ALL HAZMAT SHIPMENT OF UNITS DEPLOYING FROM CONUS, A DEPLOYMENT EQUIPMENT LIST CONTAINING THE PROPER CARGO CATEGORY CODES MUST BE TRANSMITTED TO THE PORT VIA TC-ACCIS. THE SHIPPER WILL ATTACH A DD FORM 836 TO THE TC-ACCIS GENERATED GBL TO PROVIDE THE CORRECT HAZMAT CERTIFICATION INFORMATION.

(3) UNIT VEHICLES/CONTAINERS WILL BE PROPERLY PLACARDED.

(4) CONTAINERS WILL HAVE A PACKING LIST THAT INCLUDES THE HAZMAT INFORMATION AFFIXED TO BOTH, THE INSIDE AND OUTSIDE OF THE CONTAINER.

E. AMMUNITION OR EXPLOSIVES WILL NOT BE PERMITTED INTO THE PORT OR BE PLACED ABOARD VESSELS WITHOUT AUTHORIZATION FROM THIS COMMAND. THIS PROHIBITION EXTENDS TO CONTAINER SHIPMENTS ALSO.

8. SEAVANS/MILVANS/QUADCONS:

A. CONTAINERS MUST BE MARKED WITH THEIR ACTUAL GROSS WEIGHT BEFORE DEPARTURE FROM HOME STATION. ACCURATE WEIGHT DATA MUST BE EASILY IDENTIFIABLE TO PORT PERSONNEL TO AVOID INJURY OR EQUIPMENT DAMAGE. DO NOT EXCEED CONTAINER WEIGHT LIMITATIONS. THE ACTUAL GROSS WEIGHT SHOULD BE ENTERED ON THE MILITARY SHIPPING LABEL (MSL) WHICH INCLUDES THE HAZMAT INFORMATION AFFIXED TO BOTH THE INSIDE AND OUTSIDE OF THE CONTAINERS.

B. DURING DEPLOYMENT CONTAINERS MUST BE INSPECTED TO ENSURE THAT THEY ARE IN GOOD CONDITION AND SERVICEABLE PRIOR TO LOADING. CONTAINERS MUST HAVE A CURRENT CONTAINER SAFETY CERTIFICATION (CSC) INSPECTION DECAL DURING DEPLOYMENT.

9. VEHICLES/TRAILERS/MISC:

A. EQUIPMENT ARRIVING AT THE PORT MUST BE CLEAN, FREE FROM FLUID LEAKS, AND IN GOOD MECHANICAL CONDITION. VEHICLES MUST BE EQUIPPED WITH SERVICEABLE AND PROPER LIFTING DEVICES OR SHACKLES.

B. VEHICLES ARRIVING AT THE PORT MUST HAVE FUEL TANKS LESS THAN 3/4 FUEL.

C. CARGO LOADED IN OR ON VEHICLES MUST BE PROPERLY SECURED FOR SEA SHIPMENT. LOOSE CARGO LOADS ARE NOT PERMITTED. METAL-TO-METAL CONTACT OF LOADED CARGO MUST BE AVOIDED. FOR EXAMPLE: A GENERATOR LOADED ONTO THE BED OF A TRUCK MUST BE PALLETIZED TO PREVENT METAL-TO-METAL CONTACT. MILVANS AND CONEXES LOADED ONTO THE CARGO BED OF A TRUCK MUST BE BLOCKED AND BRACED WITH WOOD OR THE CARGO BED COVERED WITH A WOODEN FLOOR STRUCTURE TO PREVENT METAL-TO-METAL CONTACT. EXCEPTION WILL BE MADE FOR SMALLER NESTED ITEMS SUCH AS TOOL BOXES LOADED AND SECURED ON THE BED OF VEHICLES OR OTHER PRIMARY EQUIPMENT.

D. JERRY CANS MAY BE SHIPPED HALF FULL (1/2) IF SECURED IN VEHICLES WITH PACKS DESIGNED FOR THIS PURPOSE. IF JERRY CANS CANNOT BE SECURED, THEY MUST BE EMPTY.

E. GENERATORS MAY BE SHIPPED WITH HALF FULL (1/2) FUEL TANKS.

F. BULK FUEL CARRIERS (TRAILERS} SHOULD BE DRAINED AND PURGED. IF THIS IS IMPRACTICAL, THE SHIPPING UNIT MUST CONTACT THE PORT TO ARRANGE FOR VESSEL LEATHERDECK LOADING. IF NOT PURGED, VEHICLE WILL BE HANDLED AS HAZMAT.

10. EQUIPMENT MAINTENANCE MUST BE ACCOMPLISHED AT HOME STATION PRIOR TO DEPARTURE. WHEN EQUIPMENT IS CONVOYED TO THE SPOE, VEHICLE PREPARATION THAT COULD NOT BE ACCOMPLISHED PRIOR TO DEPARTURE FROM HOME STATION WILL BE DONE AT THE PORT WITHIN A DESIGNATED AREA.

12. THE VESSELS FOR THIS MOVE ARE THE SEACOR CLIPPER (PUERTO RICO) AND THE TUG/BARGE, DELTA EAGLE/CARIBE HONOR (MOREHEAD CITY). THE VOYAGE DOCUMENT (VOYDOC) NUMBERS ARE TBD. THERE ARE TWO SUPERCARGO BERTHS FOR THE SEACOR CLIPPER AND ONE BERTH FOR THE DELTA EAGLE. REQUESTING UNITS MUST SUBMIT STANDARD NAME LINE (SNL) THROUGH THEIR RESPECTIVE CHAINS OF COMMAND FOR CONSIDERATION AND APPROVAL FOR THE SUPERCARGOS. EACH COMPONENT WILL PASS SUPERCARGO SNL TO CDR MTMC DSC ATTN: MTDC-OPS-C. SUPERCARGOES WILL BE UNDER THE OPERATIONAL CONTROL OF THE PSA, BUT MUST BE ON TDY ORDERS DURING THE LAYOUT PERIOD. IT IS STRONGLY RECOMMENDED THAT SUPERCARGOES REPORT NO EARLIER THAN ONE DAY PRIOR TO THE VESSEL SAIL DATE. PERSONNEL MUST HAVE TRAVEL ORDERS AND SUFFICIENT FUNDS TO DEFRAY COST OF LODGING/MEALS BETWEEN ARRIVAL AT THE PORT AND BOARDING THE SHIP. IT IS THE UNIT'S RESPONSIBILITY TO PROVIDE MESSING AND BILLETING.


13. REQUEST SUPERCARGOES BE TRAINED TO MAINTAIN AND SERVICE EQUIPMENT ABOARD THE VESSEL. SUPERCARGOES SHOULD BRING SPARE MAINTENANCE PARTS. RECOMMEND UNITS NOT SEND REEFERS (REFRIGERATED VANS) EARLIER THAN 24 HOURS PRIOR TO SHIP LOAD DATE.

14. POC IS CPT NJ NEWELL, MTMC DSC, DSN 927-8572 OR CML 757-876-8572.



References


- FM 3-35.4, Deployment Fort-to-Port ,Chapters 2 and 3, Appendices C and D
- FM 4-01.011, Unit Movement Operations ,Chapters 1 and 2
- FORSCOM/ARNG Reg 55-1 (1 Jun 2006), Unit Movement Planning ,Chapter 3 - 5 and Appendices A, B, C and K



2

Scope of Lesson

- Unit Movement Officer appointment criteria and responsibilities
- Internal/External Support to the Unit Movement Officer
- Unit Deployment Movement Plan




3



UMO Appointment Criteria

- One per company
- Appointed in writing by unit commander (commander still has overall responsibility)
- Officer or SNCO (E6 or above) - with an alternate (E5 or above)
- Trained in a school or by OJT
- At least one year's retainability
- SECRET security clearance
- Knowledge of unit (preferred)



Ref: FORSCOM/ARNG Reg 55-1, pp.11 and 99 and FM 3-35.5 p.2-11 and FM 4-01.011, p.1-4

5

UMO Responsibilities

- Prepare and maintain unit movement plans and unit load plans (rail, air and vehicle - note that these load plans must be physically tested)
- Use deployment information systems (TC-ACCIS/TC-AIMS II) to prepare and maintain unit movement data
- Coordinate and conduct unit movement training (eg, train unit load teams)
- Ensure unit personnel authorized to handle and certify hazardous materials are available (the UMO can NOT be the unit's HAZMAT certifier)
- Ensure packing lists are properly prepared

Ref: FORSCOM/ARNG Reg 55-1, p.18 and FM 4-01.011, p.1-5

6

UMO Responsibilities (Cont)

- Prepare requests for convoy clearances and special hauling permits as required
- Ensure convoy vehicles are properly marked
- Ensure all cargo is properly labeled
- Coordinate with higher HQ and support activities (SDDC element, A/DACG) for operational and logistical support of unit movements
- Maintain a Deployment Binder
- Check list on p.40 in FORSCOM/ARNG Reg 55-1
- The UMO is the unit's subject matter expert for movement

Ref: FORSCOM/ARNG Reg 55-1, p.18 and FM 4-01.011, p.1-5

7

Deployment Binder

- **Recommended information:**
 - Appointment orders and training certificates for UMO and alternates, load teams and personnel qualified to certify hazardous material
 - Recall roster with instructions
 - Reference lists
 - List of supporting agencies and POCs
 - Current copy of AUEL/OEL
 - Copies of all vehicle load cards and container packing lists
 - Prepared copies of transportation requests (Convoy Clearances, Special Hauling Permits)
 - Strip maps for each route
 - Advance party composition and instructions
 - Rear detachment and family support group operations plans

Ref: FM 3-35.4, Appendix C and FM 4-01.11, Appendix H

8

UMO Reference List

- 'Thoroughly Familiar' with:
 - AR 190-11: Physical Security of Arms, Ammunition and Explosives (Feb 1998)
 - DOD Reg 4500.9-R Part III: Mobility (Apr 1997)
 - FORSCOM/ARNG Reg 55-1: Unit Movement Planning (Jun 2006)
 - FORSCOM Reg 55-2: Unit Movement Data Reporting (October 1997)
 - FM 3.35.4: Deployment Fort-to-Port (Jun 2002)
 - FM 4.01.011: Unit Movement Operations (Oct 2002)
 - FM 55-9: Unit Air Movement Planning (Oct 1994)
 - FM 55-15: Transportation Reference Data (1997)
 - FM 55-30: Army Motor Transport Units and Operations (Sep 1999)
 - TEA Pam 55-19: Tiedown Handbook for Rail Movements (May 2000)
 - TEA Pam 55-20: Tiedown Handbook for Truck Movements (Jul 2001)
 - TM 38-250: Packaging and Materials Handling/Preparing Hazardous Materials for Military Air Shipment (Oct 2004)
 - TB 55-46-1: Standard Characteristics for Transportability of Military Vehicles and Other Outsize/Overweight Equipment (Jan 2006)

Ref: FORSCOM/ARNG Reg 55-1, pp.63

9

UMO Knowledge

- How to move hazardous material peculiar to the unit (not to be the HAZMAT Certifier)
- Procedures and documentation for requesting commercial and additional military transportation
- AUEL/DEL (OEL/UDL) reporting requirements
- Internal vehicle load planning
- Unit requirements for 463L pallets, containers; BBPCT materials
- Unit radio frequency (RF) tag and military shipping labels (MSL) requirements
- Hands-on practical knowledge of:
 - palletizing cargo on a 463L pallet
 - tying down vehicles on a rail car
 - securing internal loads in vehicles
- Unit equipment preparation and documentation for all modes of transportation (not to be the Air Load Certifier)

Ref: FORSCOM/ARNG Reg 55-1, p. 99

10

and FM 4-01.011 p.1-6

UNIT LEVEL MOVEMENT RESPONSIBILITIES AND TRAINING REQUIREMENTS



11

Unit Commander's Movement Responsibilities



- Retains overall responsibility for unit movement preparation and execution. Responsibilities:
 - Ensure movement plans are developed & maintained
 - Appoint trained & qualified unit movement personnel
 - Ensure SRP procedures are in place and being followed
 - Schedule unit level movement training (convoy ops, rail & air loading, deployment exercises)

FM 4-01.011 p. 1-2

12

Unit Movement Training: Exercises, EDRE & SEDRE

- Exercises & contingencies that involve movement:
 - Test movement plans
 - Exercise key unit movement personnel
 - Identify unit movement strengths and weaknesses
- Emergency Deployment Readiness Exercise (**EDRE**) and Sealift EDRE (**SEDRE**)

13

Unit Movement Training: General

- Unit training coordinated/provided by UMO
 - **Convoy operations** for vehicle drivers and supervisors
 - **Rail and aircraft** loading/unloading
 - **Vehicle preparation** and configuration based on movement mode (air, rail, sea)
 - Other movement specific training based on movement plans

14

Unit Loading Teams

- Trained in vehicle preparation and aircraft and rail loading/unloading techniques
 - be able to:
 - Prepare and activate vehicle, air, container and rail load plans
 - Load and unload unit vehicles properly for all nodes
 - Load cargo into aircraft
 - Palletize cargo on 463L pallets
 - Prepare vehicles for shipping (purging and draining, reducing dimensions, protecting fragile components such as windshields and mirrors, and weighing and marking for air and rail movement)
 - Exercise proper aircraft and rail tie-down procedures
 - Stuff and unstuff containers

Ref: FORSCOM/ARNG Reg 55-1, pp. 99 15 and FM 4-01.011, p.1-8

Unit Loading Teams (Cont)

- Size of Unit Load Teams
 - **Rail:** well-trained team of five. Units normally provided 72 hours for loading once railcars are spotted (may have several teams).
 - **Air:** six person team (depending on aircraft type - more than one team may be required)



Ref: FORSCOM/ARNG Reg 55-1, p.99/100 16

and FM 4-01.011, p.1-8

Air Load Planner

- Trained in the planning and execution of airlift operations
- Uses the Automated Air Load Planning System (AALPS) to develop aircraft load plans and manifests for both equipment and personnel
- Can prepare, check, and sign unit aircraft load plans
- Authorized to sign load plans only after successfully completing an approved air load planning course

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Ref: FM 4-01.011, p.1-8



HAZMAT Certifier

- Improper HAZMAT procedures could result in loss or life or equipment - minimum is **frustrated cargo**
- Each unit (company or detachment) requires at least one soldier trained (DOD approved school) to **certify hazardous cargo** for movement by all applicable transportation modes (commercial and military)
- 2 years currency
- Responsible for ensuring the shipment is properly prepared, packaged, labeled, placarded and segregated.
- Must **personally inspect** the shipment before signing the HAZMAT documentation



Ref: FORSCOM/ARNG Reg 55-1, p. 100/101 18

Other HAZMAT Personnel

- **Hazardous Cargo** Handlers, Packers and Vehicle Drivers
 - general awareness/familiarization training
 - specific training based on job (eg, vehicle driver)
 - safety training
- **After initial training, must pass a written test once every two years**
- **Driver HAZMAT training recorded on license**



Ref: FORSCOM/ARNG Reg 55-1, p.100/101

19

Unit Sections/Teams

- Administration - Soldier Readiness Processing (SRP)
- Supply - preparing requisitions for BBPCT and UBL in advance, updating unit location addresses
- Maintenance - pre-deployment and enroute support
- Security - security teams to guard sensitive and classified equipment during staging and movement
- Training - allocate time on the training program for load team training, also in-country briefs following deployment notification

Ref: FM 4-01.011, p.1-2/3

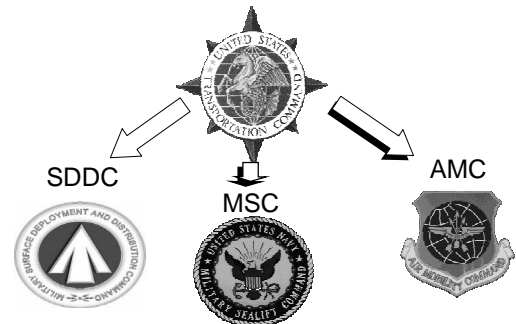
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UMO INTERFACES WITH DEPLOYMENT RELATED COMMANDS, ORGANIZATIONS AND STAFF



21

USTRANSCOM



Transportation Component Commands (TCCs)

22

USTRANSCOM (Cont)

- **USTRANSCOM**: Provides DoD common user air, land and sea transportation and port management
- **Component Commands** (TCCs) responsibilities
 - Air Mobility Command (AMC)**: strategic airlift and aerial port management
 - Military Sealift Command (MSC)**: strategic sealift
 - Military Surface Deployment & Distribution Command (SDDC)**: land and sea transportation shipments and seaport management

23

FORSCOM

- Army Component of Joint Forces Command and a Major Army Command (MACOM)
- **Mission includes**: train, mobilize, deploy & sustain combat ready forces to meet worldwide operational commitment



24

FORSCOM (Cont)

- Provides **policy and guidance** (FORSCOM/ARNG Reg 55-1, *Unit Movement Planning*) for planning and executing unit moves to AC and RC:
 - FORSCOM major troop units
 - National Guard Bureau (NGB)
 - U.S. Army Reserve Command (USARC)
 - Regional Readiness Commands (RRC)
 - Continental U.S. Armies (CONUSA)
 - Joint Forces Headquarters - State (JFHQ-ST)

25

FORSCOM (Cont)

- Deployment related responsibilities:
 - Coordinates unit movement requirements with units, installations, USTRANSCOM and OCONUS theater commanders
 - Maintains DA master file of standard Unit Movement Data (UMD) & prescribes reporting procedures
 - Provides guidance & assistance to units and installations in UMD maintenance and reporting for deployment and mobilization

Ref: FORSCOM/ARNG Reg 55-1, pp. 7/8

26

US Army Reserve Command (USARC)

- Major subordinate command of FORSCOM
- Commands, controls & supports Army Reserve units in CONUS
 - Ensures wartime readiness of forces
 - Prepares units to mobilize & deploy to a theater of operations



Ref: FORSCOM/ARNG Reg 55-1, pp. 8/9

27

Regional Readiness Command (RRC)

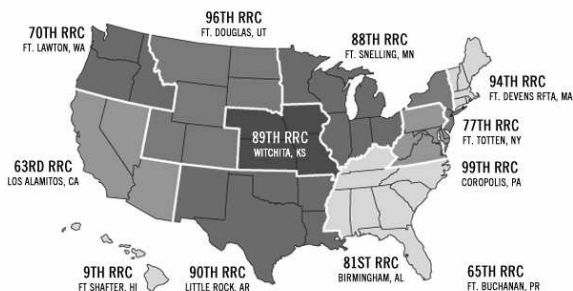
- Subordinate units of USARC
- Provides **resources and logistical** support to USAR units within their designated region
- **Support** mobilization and deployment **training**, planning and operations
- Each RRC has a Unit Movement Coordinator (UMC) that provides support similar to AC installation UMC
- Train USAR UMOs



Ref: FORSCOM/ARNG Reg 55-1, p. 9

28

RRC Designated Regions



29

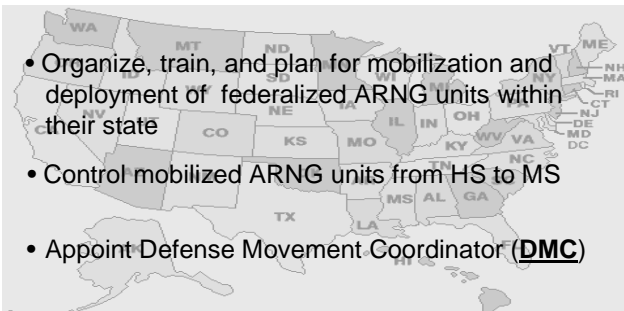
Continental United States Army (CONUSA)

- Movement related responsibilities:
 - FORSCOM agent for mobilization planning & execution, and for execution of war plans, contingency and DoD disaster relief activities
 - Provides RC units & installations guidance in movement plan development
 - Provides liaison at SPOEs/SPODs to assist port commander, installations and deploying / redeploying units

Ref: FORSCOM/ARNG Reg 55-1, p. 8

30

Joint Forces Headquarters (JFHQ-ST)



- Organize, train, and plan for mobilization and deployment of federalized ARNG units within their state
- Control mobilized ARNG units from HS to MS
- Appoint Defense Movement Coordinator (**DMC**)

Ref: FORSCOM/ARNG Reg 55-1, p. 10

31

Defense Movement Coordinator (DMC)

- Operates the State Movement Control Center (SMCC) to manage military convoys
- Processes requests for convoy clearances & special handling permits for AC and RC units
- Coordinates state highway movements using Mobilization Movement Control (MOBCON)
- Assists ARNG units in movement planning & trains ARNG UMOs

32

Unit Movement Coordinator (UMC)

- In CONUS, the Unit Movement Coordinator (UMC) is the installation's staff officer for movement (note that RRCs also appoint a UMC)
- OCONUS this role is filled by Movement Control Battalions or the Division Transportation Officer
- The UMC is a movements expert and has overall responsibility for the Fort-to-Port deployment phase

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UMC Responsibilities

- The UMC is a primary interface for the UMO - the UMC is the UMO's conduit into the Defense Transportation System
- Provides movement information and guidance to all units moving from the installation
- Reviews and validates UMD for accuracy and transmits UMD (via TC-ACCIS/TC-AIMS II) to FORSCOM
- Advises units on the preparation of movement documents and processes requests for convoy clearances and special hauling permits

Ref: FORSCOM/ARNG Reg 55-1, pp. 15-16

34

and FM 4-01.11, p.1-6

UMC Responsibilities (Cont)

- Coordinates external transportation support (buses, commercial trucks, railcars)
- Coordinates commercial lift of unit personnel (including enroute support)
- Maintains and manages shipping containers and 463L pallets/cargo nets
- Assists in identifying and obtaining BBPCT items
- Coordinates unit MHE requirements
- Supports unit movements at airfields, railheads and seaports
- Primary POC for USAF airlift for AC and RC, including Special Assignment Airlift Missions (SAAM) and exercise airlift

Ref: FORSCOM/ARNG Reg 55-1, pp. 15-16

35

and FM 4-01.11, p.1-6

UMC Responsibilities (Cont)

- Reviews and approves deployment movement plans for AC units annually
- Verifies amount of strategic lift assets required by each unit and coordinates loading sites/timings
- Reviews and coordinates RC mobilization movement and deployment documents
- Maintain highway files (POCs for state and local authorities)
- Ensures unit equipment is properly marked prior to moving off the installation
- Conducts annual movement planning workshops for AC UMOs

Ref: FORSCOM/ARNG Reg 55-1, pp.15-16

36

and FM 4-01.11, p.1-6

Deployment Support Brigades (DSB)

- DSBs are USAR units under the operational control of SDDC when mobilized
- They provide direct support to installations for unit deployments (generally attached to the ITO office)
- DSB Primary Missions:
 - Ensure unit equipment is properly prepared and documented before departing the installation
 - Ensure equipment arrives at the port IAW call forward movement schedules
- DSBs also provide liaison between the port command and the installation UMC

Ref: FORSCOM/ARNG Reg 55-1, p. 13

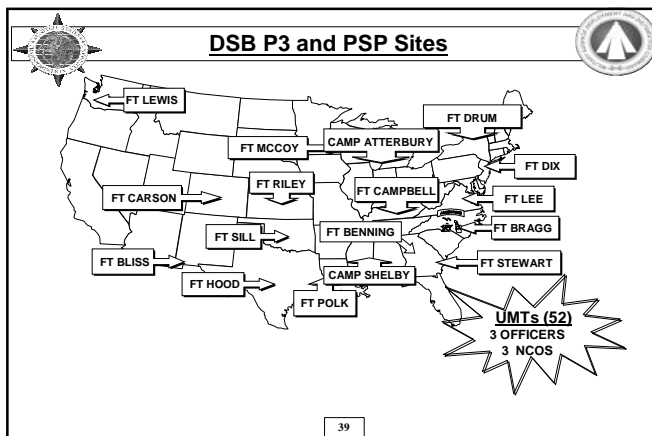
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DSBs (Cont)

- DSB assistance to deploying units can include:
 - Assist in preparing movement documentation
 - Providing 'hands-on' training/guidance in equipment preparation and tie-down procedures
- Each DSB consists of a command group and 12 or more Unit Movement Teams (UMT) - six individuals per team
- UMTs are predesignated and assigned to specific installations (though any unit can request DSB assistance)

Ref: FORSCOM/ARNG Reg 55-1, p.13

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<u>DSB CONTACT INFORMATION</u>	
1179th Deployment Support Brigade	Building 213, FT Hamilton USARC FT Hamilton, NY 11252-8100 (718) 630-4280 or 4304
1190th Deployment Support Brigade	8453 Veterans Memorial Blvd. Baton Rouge, LA 70807-4085 (225) 355-5359 or 3481
1394th Deployment Support Brigade	Roark USARC, Del Mar Basin Area-21 Camp Pendleton, CA 92055-5000 (760) 725-2912 or 2416
1398th Deployment Support Brigade	700 East Ordnance Road Baltimore, MD 20266-1790 (443) 673-3500

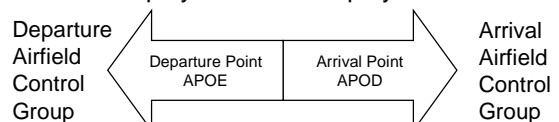
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<u>Deployment Support Brigades</u>	
1179th DSB	COL David Mead FT Hamilton, NY
1190th DSB	COL Janet Cobb Baton Rouge, LA
1394th DSB	LTC Kenneth Scott Camp Pendleton, CA
1398th DSB	COL Rita Cucchiara Baltimore, MD

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Arrival/Departure Airfield Control Group (A/DACG)

- Coordinates & controls loading or off-loading of units for deployment or re-deployment



- Structured to handle personnel, equipment & cargo
- Predesignated by FORSCOM (see p. 72 of FORSCOM/ARNG Reg 55-1)

42

A/DACG (Cont)

- UMO interfaces with A/DACG
 - Joint airlift planning conference (if held)
 - Establishing liaison with A/DACG during marshaling area operations
 - Transfer of unit equipment loads to A/DACG in the Alert Holding Area

Ref: FORSCOM/ARNG Reg 55-1, p. 70

43

A/DACG (Cont)

- **A/DACG tasks**
 - Receiving, inventorying and controlling aircraft loads as they arrive at the Alert Holding Area
 - Inspecting aircraft loads to ensure they are properly prepared (eg, IAW reduction policy)
 - Verifying accuracy of weight and center of balance markings
 - Inspecting documentation (including HAZMAT)
 - Providing emergency maintenance and POL support (fueling/defueling)
 - Coordinating MHE support Air Force element
 - Joint inspection of aircraft loads and manifests with
 - Providing loading teams and pusher vehicles

Ref: FORSCOM/ARNG Reg 55-1, p. 70

44

Port Support Activity (PSA)

- **PSAs are in direct support of the port manager and operate almost exclusively in the SPOE staging area**
- **PSA mission:**
 - Ensure the deploying unit's equipment is ready for loading onto vessels
 - Operate unique equipment to support ship-loading operations
- **Tailored to the type, size and mode of transportation of units passing through the port**
- **Predesignated by FORSCOM (see p.68 of FORSCOM/ARNG Reg 55-1)**

45

PSA (Cont)

- **PSA functions:**
 - Performing maintenance and providing repair parts as required
 - Correcting improperly secured vehicle loads and correcting deficiencies on vehicles that are incorrectly configured for movement by sea
 - Providing drivers for all vehicle types
 - Providing security for sensitive and classified cargo
 - Assisting in loading/off-loading trucks, rail cars or the vessel

Ref: FORSCOM/ARNG Reg 55-1, p.66/67

46

AUTOMATED INFORMATION SYSTEMS (AIS) & AUTOMATIC IDENTIFICATION TECHNOLOGY (AIT) SUPPORT FOR DEPLOYMENT



47



The Transportation Coordinators'- Automated Information for Movements System II



- TC-AIMS II is an information management and data communication system used by the U.S. Army and Navy (Active and Reserve components) to:
 - Plan and execute unit deployments
 - Create & maintain UMD, plan rail movements, prepare convoy requests, vehicle load plans, MSLs & other movement documentation
- It improves deployment responsiveness, Timeliness, accuracy, availability of deployment information, and to reduce paperwork
- **Principle users are UMOs, UMOICs, MWOs and UMCs/ITO**

48

Computerized Movement Planning and Status System (COMPASS)

- Provides deployment planning systems with Army unit movement requirements
- Describes unit property in transportation terms
- Receives unit movement data from TC-AIMS
- Provides and updates the deploying unit's movement data in JOPES



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Joint Operations Planning and Execution System (JOPES)

- DoD system used by JPEC to conduct joint planning & operations
- Contains OPLANs, OPORDs & associated Time Phased Force Deployment Data (TPFDD)
 - TPFDD contains unit movement requirements for contingency & major exercise deployments
 - For deployment execution, TPFDD requirements updated in JOPES based on UMO input of UDL into TC-AIMS



50

Global Command and Control System (GCCS)

- Command & control information system
- Supports JCS & Combatant Commanders in managing military assets & deployments
- JOPES used to support deliberate & crisis deployment planning



51

Automated Air Load Planning System (AALPS)

- Automated means to generate a balanced air load plan for deployment of passengers and/or cargo
- Estimates number of aircraft required for large moves



52

Global Transportation Network (GTN)

- USTRANSCOM system - Provides in-transit visibility (ITV) of the movement of forces and equipment
- WWW based system - integrates data from other transportation information systems
- Provides aircraft schedules & ability to track units, equipment & personnel during deployment
- For password info call DSN 779-1015 or access <https://www.gtn.transcom.mil>



53

Automatic Identification Technology (AIT)

- Suite of tools that can provide ITV of deploying forces and equipment
- Provides ITV data to automated information systems such as the Worldwide Port System (WPS) and GTN
- Consists of data storage and data capture devices
- AIT currently used to support deployments - UMO must be familiar with AIT devices and capabilities

54

AIT Components

- Data storage devices:
 - Bar codes, RFID tags, SMART cards



55

AIT Data Storage Devices

- Bar Codes
 - Contains information such as the Transportation Control Number (TCN)
 - Bar codes embedded in Military Shipping Labels (MSLs)
 - MSLs are attached to all deploying equipment



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AIT Data Storage Devices (Cont)

- Radio Frequency Identification (RFID) Tags
 - Transportation data (item/content identification, TCN, etc) is written to tag using interrogators or docking stations
 - Tag is then placed on container, vehicle or pallet
 - As vehicle/container moves past interrogators, data is read and passed to AISs
 - Tags can be queried to help locate equipment

57

AIT Data Storage Devices (Cont)

- Smart Cards
 - Credit card size - can contain circuit chips, magnetic strips or bar codes for storing data
 - Commonly used to maintain/transport soldier readiness processing data (e.g., name, SSN, limited medical data)
 - Cards are 'swiped' or read as soldiers move through deployment nodes

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AIT Data Capture Devices



Handheld Bar Code Scanner and RFID Tag Interrogator



Fixed RFID Tag Interrogator



Smart Card Reader

- Data transfer to AISs (eg, GTN)

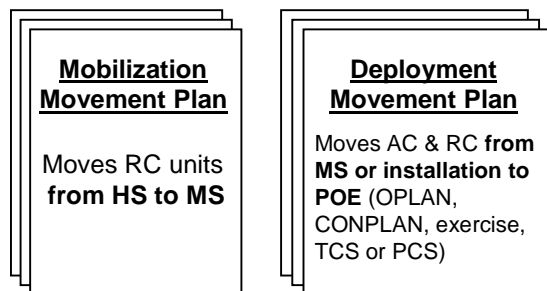
59



UNIT DEPLOYMENT MOVEMENT PLANS

60

Two Types of Unit Movement Plans



Ref: FORSCOM/ARNG Reg 55-1, p.6

61

Movement Plan Development - General Guidance

- Movement plans define responsibilities & functions for each part of the unit move
 - Includes planning for all modes used during the movement
 - **Each mode requires special documentation & planning**
 - Written in five paragraph OPORD format (Situation, Mission, Execution, Service Support, and Command and Signal)
 - Validated annually by the UMC
 - 11 steps

62

STEP 1: Identify What Needs to be Moved

- **Personnel**
 - assigned personnel for planning
 - modify for actual deployments
 - non-deployable: medical, legal/disciplinary, pregnant, not-qualified
 - additional personnel attached to bring units up to the required readiness level
 - consider supercarries, advance parties, rear detachments etc
- **Equipment**
 - on-hand equipment for planning
 - identify outsize, oversize, overweight or hazardous equipment
 - consider crossleveling for actual deployments

Ref: FORSCOM/ARNG Reg 55-1, p.28

63

and FM 4-01.011, p.2-4

STEP 1: Identify What Needs to be Moved (cont.)

- **Supplies:** Basic load of supplies initially required by the unit to sustain operations upon arrival in the theater
 - Class I (Subsistence): Five DOS (not to be eaten enroute)
 - Class II (General Items): Organizational Clothing and Individual Equipment (OCIE) plus theater unique requirement, cleaning equipment, field sanitation equipment, stationary etc (15 DOS of expendable items)
 - Class III (POL): 15 DOS (consider theater variation, ie jungle/desert)
 - Class IV (Construction Materials): Basic load for initial defense
 - Class V (Ammunition): Ammunition Basic Load

Ref: FORSCOM/ARNG Reg 55-1, p.29

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STEP 1: Identify What Needs to be Moved (cont.)

- **Supplies (cont.):**
 - Class VI (Personal Demand Items): Individuals bring 30 DOS, no unit level planning
 - Class VII (Major End Items): Deployment filler equipment for identified critical equipment shortages
 - Class VIII (Medical Supplies): Unit level items only - may be authorized additional NBC material
 - Class IX (Repair Parts): 15 DOS with theater variations (jungle/desert)
 - Class X (CMO Items): Mission dependent

Ref: FORSCOM/ARNG Reg 55-1, p.29

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STEP 1: Identify What Needs to be Moved (cont.)

- **Baggage**
 - Each soldier two duffel bags: 'A' and 'B'
 - 'A' = Personal clothing items (additional uniforms, extra boots, civilian clothing [if authorized])
 - 'B' = CTA 50 items not otherwise carried or worn by the soldier
 - May transport duffel bags as palletized cargo or with troops (baggage compartment of commercial buses or aircraft) (70 pounds per duffel bag)
 - Each soldier also have one carry-on bag
 - toilet articles, MREs and other personal items which may require frequent access enroute

Ref: FORSCOM/ARNG Reg 55-1, p.29

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STEP 2: Identify How Equipment is to be Moved

Yellow TAT (To Accompany Troops) (Accompany Troops and be accessible enroute).

- Traveling commercial air: baggage fit under seat
- Not palletized/ not reported on AUDEL/DEL (TC-ACCIS) OR OEL/UDL (TC-AIMS II)
- Examples: Class 1 basic load items and individual carry on baggage and weapons

Red TAT (Arrive at overseas destination before or upon arrival of the unit)

- May be sensitive cargo that requires special security or handling at the POE/POD
- Palletized/reported on AUDEL/DEL or OEL/UDL
- Examples: Palletized soldiers' duffel bags

Not To Accompany Troops (NTAT)

- All other equipment required by the unit to perform its mission
- Normally shipped by surface means
- Palletized/reported on AUDEL/DEL or OEL/UDL
- Examples: Vehicles, tentage

Ref: FORSCOM/ARNG Reg 55-1, pp. 29-30

and FM 4-01.011, p. 2-4/5

STEP 3: Identify Air Movement Requirements

- Advance Parties
- Main Body Personnel
- Baggage (TAT)
- Some equipment
- Balance moves by sea
- Deployments supporting OPLANs and OPORDs, the TPFDD stipulates the movement mode



Ref: FORSCOM/ARNG Reg 55-1, p. 30

and FM 4-01.011, p. 2-5

STEP 4: Identify Hazardous/Sensitive/Classified Cargo

- Needs appropriate packaging, labeling, segregating and placarding for movement/also consider security/documentation
- Ammunition
- Vehicles (3/4 tank full sea/air)
- Individual Weapons (remain with the soldier, bolt may be removed eg: M16)
- Crew served weapons (mortars, machine guns etc, palletized or carried in the baggage compartment)
- Read the references (see page 63 of FORSCOM/ARNG 55-1) and Appendix D of FM 4-01.011



Ref: FORSCOM Reg 55-1, pp. 30-32 69

STEP 5: Identify Bulk Cargo that needs to be Moved and Develop Packing Lists

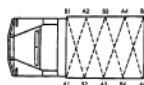
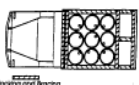
- All consolidated cargo (boxed, crated) loaded in vehicles, containers, and on 463L pallets must display a separate packing list that shows its complete contents (DA5748-R or DD 1750)
- Packing lists not required for non-concealed items, such as empty vehicles or bundled shovels (must be listed on load diagram if loaded into a truck or container)
- Packing list (inventory) x 6
- Sensitive Items not listed on the packing list displayed on the outside of a container

Ref: FORSCOM/ARNG Reg 55-1, 70

p. 32 and FM 4-01.011, p. 2-5

STEP 6: Develop Vehicle Load Plans for Unit Equipment

- Don't exceed payload capacity
- Document planned loads for organic vehicles and trailers carrying secondary loads (FORSCOM 285-R or DA 5748-R)
- Vehicles may have to be reduced according to the mode of transportation and the type of move
- Consider vehicle modifications (approved by SDDC TEA) and reflected in AUDEL/DEL or OEL/UDL
- Test planned loads (every year for AC, every two years for RC)
- Weight/record planned loads



Ref: FORSCOM Reg 55-1 32/33

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STEP 6 (cont): Develop Vehicle Load Plans for Unit Equipment (cont.)

Aim is to identify transportation requirements exceeding the unit's organic lift capability

- Equipment that cannot be loaded on organic vehicles moved by other means
 - container
 - commercial rail or truck
 - other military assets



Ref: FORSCOM Reg 55-1, p. 32-33

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STEP 7: Identify Blocking, Bracing, Packing, Crating, Tie-down (BBPCT) Requirements

- All crates, containers, boxes, barrels and loose equipment on a vehicle must be blocked, braced and tied-down to prevent shifting during transit
- See Chapter 6 and Appendix F of FORSCOM/ARNG Reg 55-1 and Appendix E of FM 4-01.011
- SDDC TEA Pams (eg. 55-19) and FM 38-701
- Recorded on vehicle load card

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STEP 8: Translate What Needs to Be Moved into Transportation Terms (AUEL/DEL) using TC ACCIS or OEL/UDL using TC-AIMS II

- Personnel and equipment data are translated into meaningful transportation terms as unit movement data (UMD) and recorded on the AUEL/OEL
- AUEL/OEL reflects current on-hand equipment, personnel and supplies in a unit
- During pre-deployment preparation, units will create the DEL/UDL by updating the AUEL/OEL to show the actual equipment, personnel and supplies that will actually deploy
- Summary and Detail AUEL/OEL + load cards and packing lists filed in the unit movement plan

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STEP 9: Determine How the Personnel and Equipment will Move to the POEs

- In CONUS, roadable vehicles within proximity to the POE will use organic mode to maximum extent possible
- Tracked vehicles - military heavy equipment transporters or commercial rail, truck or inland waterway
- Unit personnel - organic vehicles or military/commercial buses
- Rotary wing aircraft self-deploy to POE then disassembled for shipment



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STEP 10: Prepare the Unit Movement Plan

- See Appendix H of FORSCOM/ARNG Reg 55-1 and Appendix L of FM 4-01.011
- Determine administrative, logistical and coordinating requirements for the plan (POL, return of drivers from SPOE to unit, enroute medical/messing/maintenance for movement to POE etc)
- Consider annexes - eg Annex O details commercial movement requirements
- AC send movement plan to UMC for validation and approval (annually)



76

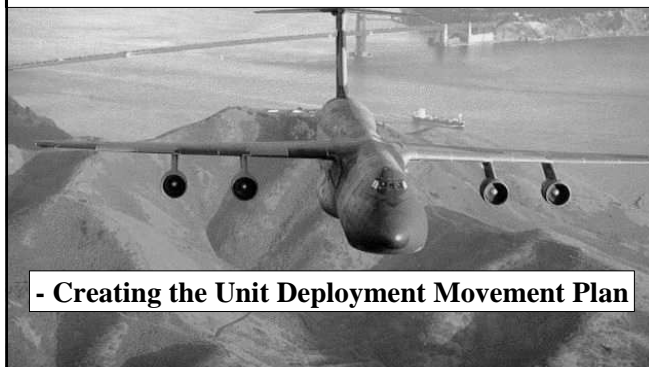
STEP 11: Maintain the Movement Plan

- Keep the AUEL/OEL current with changes in unit equipment, personnel and supplies
- Update the DEL/UDL as changes occur in OPLAN, CONPLAN, and commander's intent
- AUEL/OEL updated to produce the DEL/UDL, which in turn is the data used to produce unit's equipment, supplies and personnel manifests and Military Shipment Labels (MSLs) and radio frequency-automatic identification technology (RF-AIT) tags - incorrect data results in frustrated cargo at the POE



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SUMMARY



- Creating the Unit Deployment Movement Plan

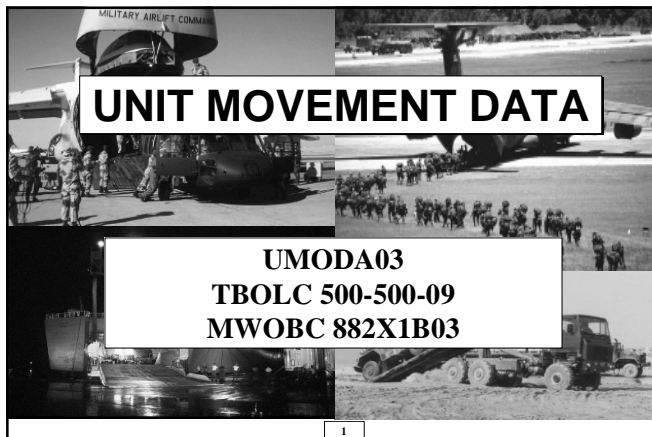
C-6. A/DACG Assignments

<u>Installation</u>	<u>APOE Peacetime</u>	<u>APOE Mobilization</u>	<u>Installation</u>	<u>APOE Peacetime</u>	<u>APOE Mobilization</u>
Fort Benning	Lawson AAF	Lawson AAF	Fort McCoy	Volk Field	Volk Field
Fort Bliss	Biggs AAF	Biggs AAF		Mitchell Field	Mitchell Field
Fort Belvoir	Andrews AFB	Andrews AFB	Fort McPherson	Dobbins AFB	Dobbins AFB
Fort Bragg	Pope AFB	Pope AFB		Hartsfield-Jackson	Hartsfield-Jackson
Fort Buchanan	Roosevelt	Roosevelt		Intl	Intl
	Rds NAS	Rds NAS	Fort Meade	Dover AFB	Dover AFB
Fort Campbell	Campbell AAF	Campbell AAF	Fort Polk	Alexandria Intl	Alexandria Intl
Fort Carson	Peterson AFB	Peterson AFB	Fort Riley	Forbes Field	Forbes Field
Fort Dix	McGuire AFB	McGuire AFB	Fort Rucker	Eglin AFB/ Hurlburt Field	Eglin AFB/ Hurlburt Field
Fort Drum	Wheeler-Sack AAF	Wheeler-Sack AAF	Fort Sam Houston	Lackland AFB	Lackland AFB
Fort Eustis	Langley AFB	Langley AFB	Fort Sill	Altus AFB	Altus AFB
Fort Hood	Robert Gray AAF	Robert Gray AAF		Lawton/Ft Sill	Lawton/Ft Sill
Fort Huachuca	Davis-Montham AFB	Davis-Montham AFB		Regional	Regional
	Libby AAF	Libby AAF	Fort Stewart	Hunter AAF	Hunter AAF
Fort Irwin	Southern California Intl	Southern California Intl		Robins AFB	Robins AFB
Fort Jackson	Charleston AFB	Charleston AFB	Gowen Field	Gowen Field	Gowen Field
Fort Knox	Standiford Field	Standiford Field		Mountain	Mountain
	Wright-Patterson AFB	Wright-Patterson AFB	Camp Roberts	Home AFB	Home AFB
Fort Leonard Wood	Scott AFB	Scott AFB	Camp Shelby	Travis AFB	Travis AFB
	Lambert Field	Lambert Field		Gulfport-Biloxi	Gulfport-Biloxi
Fort Lewis	McChord AFB	McChord AFB		Intl	Intl
	Travis AFB				

NOTE: It is possible that airfields other than those listed could be designated as onload points for Army units. In this event, A/DACG responsibilities will be tasked according to AR 5-9 and commensurate with the work load already placed on the AR 5-9 installation.

Due to port congestion and the need for rapid movement, SPOEs other than those listed may be designated. In this event, marshaling area PSA responsibilities will be tasked under AR 5-9 and commensurate with the work load already placed on the AR 5-9 installation.

<u>INSTALLATION</u>	<u>SPOE</u> <u>PEACETIME</u>	<u>SPOE</u> <u>MOBILIZATION</u>
Fort Benning	Jacksonville, FL	Jacksonville, FL
Fort Bragg	Wilmington, NC	Wilmington, NC
	Charleston, SC	Charleston, SC
Fort Buchanan	San Juan, PR	San Juan, PR
Ft Carson	Oakland, CA	Oakland, CA
Fort Dix	Port of NY/NJ	Port of NY/NJ
	Philadelphia, PA	Philadelphia, PA
Fort Eustis	Norfolk, VA	Newport News, VA
	Newport News, VA	
Fort Hood	Beaumont, TX	Beaumont, TX
	Corpus Christi, TX	Corpus Christi, TX
Fort Lewis	Tacoma, WA	Tacoma, WA
	Olympia, WA	Olympia, WA
Fort Polk	*Beaumont, TX	*Beaumont, TX
Fort Stewart	Savannah, GA	Savannah, GA
* On Call		



References

FORSCOM/ARNG Reg 55-1: *Unit Movement Planning*, Chapter 1

FORSCOM/ARNG Reg 55-2: *Unit Movement Data Reporting*, Chapters 2 and 4

TB 55-46-1: *Standard Characteristics for Transportability of Military Vehicles and Other Outsized/Overweight Equipment*

2

Scope of Lesson

- **Unit Movement Data Information Systems and Reports**

- **TB 55-46-1**



Unit Movement Data Defined

“Unit Movement Data (UMD) is a list of equipment and supplies the unit plans to deploy to accomplish its mission. It includes the transportability data necessary to plan the move.”

Ref: FORSCOM/ARNG REG 55-1 pg 7

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UMD - General

- UMD - The information of record for planning & executing movement of Army units (AC & RC)
- All deployable units (Active Component, Army National Guard and U.S. Army Reserve) are responsible for updating UMD & ensuring data is maintained accurately (using the Transportation Coordinators'-Automated Information for Movements System II [TC AIMS II] & updates transmitted to FORSCOM
- Supporting Installations & Mobilization Stations support units for UMD update and reporting

Ref: FORSCOM Reg 55-2 pp.1, 3/4

5

UMD Information Systems

TC-AIMS II (Transportation Coordinator Automated Information for Management System Two)

COMPASS (Computerized Movement Planning and Status System)

JOPES (Joint Operational Planning and Execution System)

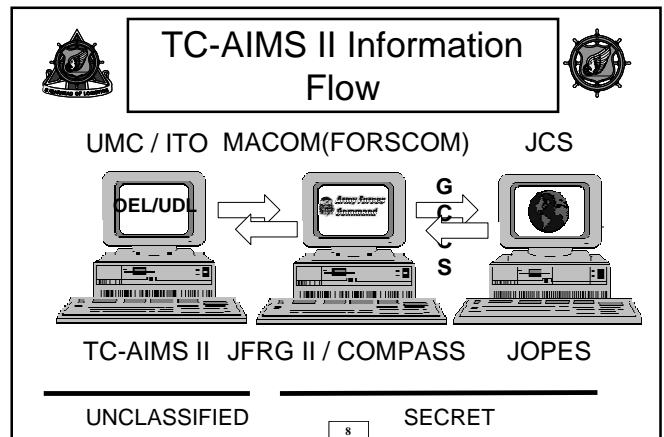
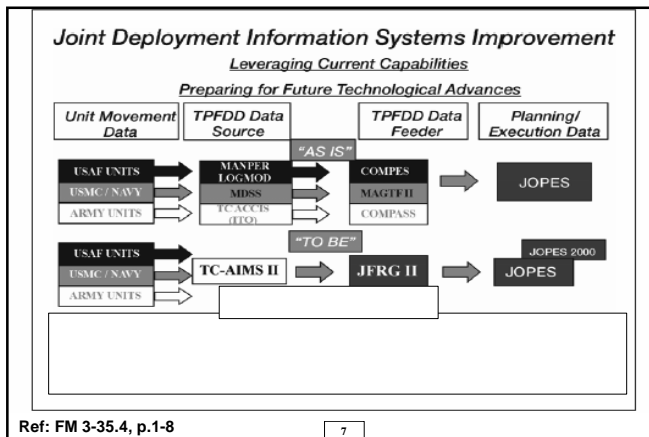
GCCS (Global Command and Control System)

JFRG II (Joint Force Requirements Generator)

TC-ACCIS (Transportation Coordinator Automated Command and Control Information System)



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Computerized Movement Planning and Status System (COMPASS)

- FORSCOM's information system & database
- Provides accurate & timely UMD to DOD, JCS, HQDA, Army installations & units
- Database supports planning & execution
- TC-AIMS II is the primary source of UMD submission into COMPASS

Ref: FORSCOM Reg 55-2 p.5

TC-AIMS II

- Transportation Coordinators'-Automated Information for Movements System II
- Automated system used by units and installations for updating & maintaining UMD



UMD Update & Maintenance Requirements

- FORSCOM requirements dictate that UMD must be current & accurate at all times
- FORSCOM requires UMD to be validated at least annually by all units & updated whenever a significant change in transportation requirements occurs

Significant Transportation Requirement Change

- Significant transportation change: Any increase or decrease in unit movement requirements that results in:
 - Addition or subtraction of one or more rail cars, semi-trailers, trucks, passenger conveyances (buses)
 - Requires the allocation of more (or less) aircraft or ship deck space

Ref: FORSCOM Reg 55-2 pp.5/6

No Change Reports

- A “No Change” report must be submitted by units with no changes to report for the update period
- The UMC processes the “No Change” report with other units’ updates

Ref: FORSCOM Reg 55-2 p.6

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Organizational Equipment List (OEL)

- OEL - Most commonly used UMD report

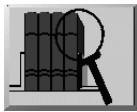
- Contains:

Lists individual pieces of unit equipment and provides their dimensional characteristics, mode of transportation to the POE and square footage

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FORSCOM Reg 55-2, Data Reference Tables

- Reference:
FORSCOM Reg. 55-2, Chapter 4
- Data Reference Tables for OEL Reports (Figures 4-1 and 4-3)
- Explains key data elements (Figures 4-2 and 4-4)



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Unit Deployment List (UDL)

- UDL - An OEL tailored to reflect the actual equipment being deployed for a specific operation/exercise
- OEL must be developed to show actual movement requirements

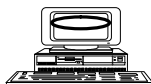


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TC-ACCIS/TC-AIMS II Terminology

TC-ACCIS

TC-AIMS II



AUEL

Organizational Equipment List (OEL)

DEL

Unit Deployment List (UDL)

Ref: FM 3-35.4, p.1-9

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FORSCOM Reg 55-2 Tables 5-1 to 5-6

- Provide codes extracted from MILSTAMP manual
- Codes include:
 - Water Commodity Code (WCC)
 - Type Cargo Code (TCC)
 - Special Handling Code (SHC)
 - Mode to POE Code (MPE)
 - Type Pack Code (TPC or TP PK)
 - Type Equipment Code (TE)
- Codes used in AUEL/DEL reports

Ref: FORSCOM Reg 55-2 pp.49-54

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MILSTAMP Codes

- Commodity Code - 5 positions eg 885 Z 9
 - Positions one through three - Water Commodity Code (WCC)
 - Position four - Type Cargo Code (TCC)
 - Position five - Special Handling Code (SHC)

Ref: FORSCOM Reg 55-2 p.31

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Date: 20041215 TC-AIMS II - Equipment List
OEL Report - Unit Equipment List FOR OFFICIAL USE ONLY
Page 1 of 12

Equipment UIC: WAD1T0 Unit Name: 0041 IN BN 02 HH

Shipment Unit Number	Echelon	LN	LN Index	Weight	Height	Width	Volume	Weight	Height	Width	Volume	Weight	Height	Width	Volume	Weight	Height	Width	Volume
00001	00	/	D12087 07	100	84	133.33	933.33	19996	22496	19996	22496	19996	22496	19996	22496	19996	22496	19996	22496
UIC: WAD1T0 Equipment Desc: CARRIER PERS FTRAC Model: M113A1 Bumper Number: TNG 1																			

SHIPMENT UNIT ECHELON LN NUMBER / ULN LIN INDEX
D0001 00 / D12087 07

UIC: WAD1T0 Equip Desc: CARRIER PERS FTRAC

TP PK VE WCC Water/Air Commodity Cd 876 TCC SHC MPE Z 9 K

MILSTAMP Codes (Cont)

- Table 5-6: Type Equipment Codes (TE)
 - Identifies the type of equipment being moved
 - Example: Code "3" indicates 'Vehicles, wheeled (self propelled), 2-1/2 ton or less'
 - Example: "M" indicates 'Class A explosives'
 - Example: "C" indicates 'Vehicle, tracked or half tracked except tanks and self-propelled artillery' - code for tractor from the OEL

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MILSTAMP Codes (Cont)

TRK CGO D/S 2.5 Ton with Flammable Liquids

COMM CODE TPC MPE
867 R 4 VO 1 ← Convoy to SPOE

↑ Fully operational self-propelled vehicle
SHC- Hazardous and Sensitive Cargo
TCC - Flammable Liquids, UN Class 3 (not Class B)
WCC - Wheeled vehicles, self-propelled, 2.5 ton capacity or less

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TB 55-46-1 Standard Characteristics for Transportability of Military Vehicles and Other Oversized/Overweight Equipment

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TB 55-46-1 Familiarization

- Provides dimensions, weight & cube for:
 - Military vehicles
 - Vehicle-mounted equipment
 - Outsize/overweight equipment
- Organizations use data as the standard reference when developing/reporting movement requirements
- Information for planning purposes only, units must report actual dimensions & weight in their OEL

Ref: Para 1-1a, page 1-1

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TB 55-46-1 Familiarization (Cont)

- Data specifically oriented to unit movement transportability/deployability considerations
- Compatible with COMPASS/JFRG II and JOPES
- Remember, doesn't replace actual UMD

Ref: Para 1-1a, page 1-1

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TB 55-46-1 Familiarization (Cont)

- Lists all military outsized/overweight equipment having dimensions and/or weight EQUAL TO or EXCEEDING:
 - + 104 inches long + 84 inches wide
 - + 50 inches high + 5000 pounds or more
- Dimensions/weight must be equal to or greater than any one of the above criteria for a piece of equipment to be listed in the TB

Ref: Para 1-1b, page 1-1

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TB 55-46-1 Familiarization (Cont)

- Data for all military equipment, including items excluded from the hardcopy TB 55-46-1, are available online at:

<https://www.tea.army.mil/pubs/default.asp>
(AKO password required)

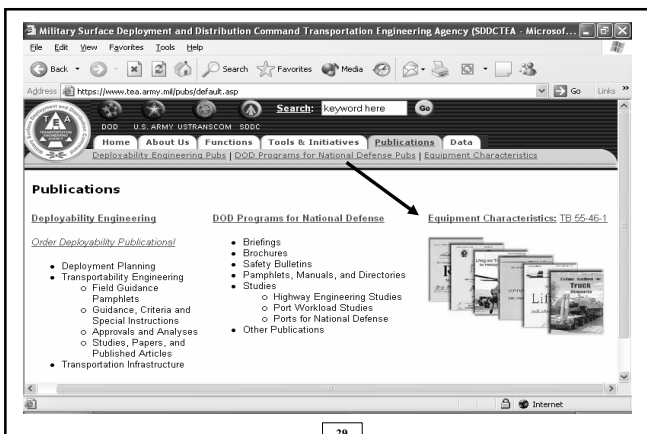
- SDDC TEA also produces a CD that contains this information

Ref: Para 1-1b, page 1-1

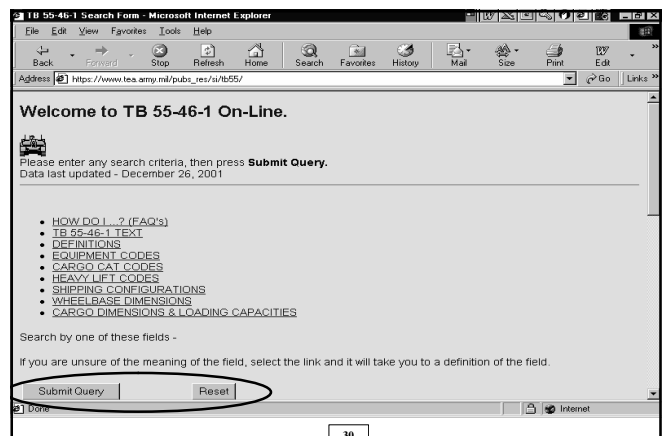
27



28



29



30

TB 55-46-1 Search Form - Microsoft Internet Explorer

Address: https://www.lea.army.mil/pubs_res/si/tb55/default.asp

Submit Query Reset

Number of records per page: 10

LIN	Begins with	L46979
LIN INDEX	Begins with	02
NSN	Begins with	
ITEM	Begins with	
MODEL	Begins with	
SHIP_DESC	Begins with	
EQUIP_CODE	Equal to	
ROADABLE	Equal to	
LENGTH	Begins with	
WIDTH	Begins with	
HEIGHT	Begins with	
WEIGHT	Begins with	
CUBIC FT	Begins with	
C-130	Equal to	

Done 31

TB 55-46-1 Search Results - Microsoft Internet Explorer

Address: https://www.lea.army.mil/pubs_res/si/tb55/display_th.asp

- EQUIPMENT CODES
- CARGO CAT CODES
- HEAVY LIFT CODES
- SHIPPING CONFIGURATIONS
- WHEELBASE DIMENSIONS
- CARGO DIMENSIONS & LOADING CAPACITIES

This page last modified - 2/6/2001
 The data provided on this page last updated - December 26, 2001
 Questions / Comments about this page - Keith Turner
 Questions / Comments about content on this page - Darlene Smith or Jim Alexander
 Column Header links will open a definition page in a new window. Click LIN links to see all fields for the selected entry.

Lin	Lin Index	Item Desc	NSN	Model	Comp Desc	Ship Desc
C12155	01	CARRIER PERS F/TRACK	2350010853792	M981		OPERATIONAL

Current page = 1 of 1
 Search Again

Done 32

TB 55-46-1 Lin-Lin - Microsoft Internet Explorer

Address: https://www.lea.army.mil/pubs_res/si/tb55/viewlin.asp?lin=C12155&lin_index=01

Image



Model: M981
 Lin: C12155
 Lin Index: 01
 Sec Lin:
 NSN: 2350010853792
 Item Description: CARRIER PERS F/TRACK
 Comp Desc:
 Ship Desc: OPERATIONAL
 Equip Desc: Tracked or Half-Tracked Vehicles except for Tanks and Artillery
 PV Code: V

Done 33

TB 55-46-1 Familiarization (Cont)

TB 55-46-1 contains 3 Chapters, 3 Appendixes

- Several ways to retrieve data
 - If TOE LIN is known, go to Chapter 3
 - Use cross reference in Appendix B & C
 - Appendix B crosses NSN to TOE LIN
 - Appendix C crosses model description to TOE LIN

TB 55-46-1 Chapter 1

- Chapter One contains:
 - What is covered by TB
 - Important definitions
 - Data specifications
 - UMD Reporting procedures using TB

Definitions

Line Item Number (LIN) - A six-character alphanumeric identification assigned to a generic nomenclature to describe collectively all NSN items possessing the functional capability expressed by the LIN description

eg: X 4 0 7 9 4



Truck Cargo D/S 5 Ton
 •M813A1
 •M54A2C
 •M54A1C
 •M923
 •M923A1
 •M923A2

Ref: Para 1-2d(1), page 1-1/1-2

Definitions (Cont)

📌 National Stock Number (NSN) - The NSN consists of 13-digit number assigned by the Defense Logistics Services Center:

📌 eg: 1055010920596



MLRS

Ref: Para 1-2e, page 1-2

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Definitions (Cont)

- Set: A group of major end-items
 - The entire set is assigned a LIN. This is the 'primary' LIN for the set
 - Each major end-item within the set is referred to as a secondary item and is identified by its own "secondary" LIN and NSN

Ref: Para 1-2g, page 1-2

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SET

TOE LIN (INDEX) NO	NATL STOCK NO. (SET) (TOE LIN)	C O M P	V E H I C L E	T Y P E E Q U I P	LIN DESCRIPTION (MODEL) COMPO DESCRIPTION
Primary LIN					
R93035	(SET) Remarks 5820611483976		R	U 3	RADIO TERMINAL SET AN/TRC-170V3 AN/TRC-170V3
V 03 Secondary LIN	(G42170) 6113812173032		R	6	GEN SET DED TRL MTD PU-798
V 01	(T07679) 230013460437		R	3	TRK UTIL. HVY HMMWV M1097
V 36					

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Definitions (Cont)

- Vehicle: Term including trucks, trailers, semi-trailers, amphibious & tracked vehicles, tanks, artillery (self-propelled & towed), floating craft (self-propelled & towed), rail cars, locomotives, aircraft (including helicopters) & wheel or track-mounted equipment



Ref: Para 1-2i, page 1-2

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Chapter 2-3: Data Specifications

Dimensions:

- **Length:** Horizontal dimension measured from end-to-end. Rounded up to next inch
- **Width:** Horizontal dimension measured from side-to-side. Rounded up to next inch
- **Height:** Vertical dimension measured from ground level to the highest reference point. Rounded up to the next inch
- **Surface Vehicle Weight** (less heavy armor vehicles/tanks): Includes all on-equipment material (OEM), such as basic issue items (BI), and three-quarters of a tank of fuel. It does not include crew weight, baggage, or payload.

Ref: Para 1-3c, page 1-2/1-3

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Chapter 2-3 Data Specifications (cont)

- Dimensions (cont):
 - **Cube:** The volume of space occupied by the item
 - FORMULA:

$$(L \times W \times H) / 1,728 = \text{cubic feet inches}$$
 - **Round up** to the next cubic foot

Ref: Para 1-3e, page 1-3

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Chapter 2 Tables 2-1 to 2-4

- Tables 2-1 to 2-6 contain information on the transportability of equipment by aircraft
- Tables 2-1 & 2-2 contain information on the cargo constraints of various aircraft (maximum cargo height/weight etc)
- Table 2-3 provides guidance on the number and dimensions of 463L pallets that can be carried on CRAF aircraft
- Table 2-4 details aircraft Allowable Cabin Loads (ACL)

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Chapter 2 Tables 2-5 and 2-6

• Table 2-5: Cargo Category Codes (CCC)

Position 1: Identifies the type of equipment

'A' = Vehicles (wheeled and tracked), self propelled or non-self-propelled and are not suitable for road marching on overland deployment legs

'R' = Wheeled vehicles (self propelled or non-self propelled), suitable for road march on overland deployment legs and capable of convoy speeds up to 40 mph.

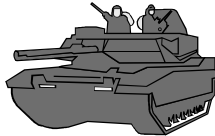
Position 2: Indicates if an item of equipment is non-air transportable, outsized, oversized or bulk

Position 3: Indicates whether an item of equipment can or cannot be containerized

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Chapter 2 Tables 2-5 and 2-6 (Cont)

- **Table 2-6: Heavy Lift and Dimensions Codes (H)**
 - A code which identifies the weight bracket of the item (in short tons) and indicates whether it is under or over 35 feet in any dimension



45

Cargo Category Codes

First Position: Vehicle/Equipment Type



ABRAMS MBT



KIOWA WARRIOR

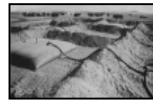


LCU 2000

A = Non-roadable vehs

B = Non-self deployable aircraft (uncrated)

C = Floating Craft



DRUM FABRIC FUEL



M = Ammunition



M998

J = Non-vehicular cargo

R = Roadable Vehicles

46

Cargo Category Codes

Second Position: Air Transportability

0 = Non-Air transportable



C-5

1 = Outsized Equipment



C-5

C-17



C-141

C-130

2 = Oversized Equipment



C-141

C-130



463L Pallet

3 = Bulk Equipment



463L Pallet

47

Cargo Category Codes

Third Position: Containerization

B = Fit in 20-foot Container



20-foot Container (MILVAN)

C = Fit in 40-foot Container but not a 20-foot container



20-foot Container (MILVAN)



40-foot Container

D = Cannot be containerized



40-foot Container

48

Heavy Lift and Dimension Codes

Codes A - P categorize by weight and dimensions

- **Codes A - G** = variable weight and less than 35 feet in any dimension
- **Codes H - P** = variable weight and more than 35 feet in any dimension



49

Chapter 2 Tables 2-7 to 2-15

- Tables 2-7 to 2-15 :
 - Contain dimensions & cargo-loading capacity of military general-purpose cargo trucks, dump trucks, trailers, semi-trailers, amphibious vehicles, landing craft & helicopters including:
 - + Cargo deck dimensions
 - + Loading height of cargo carrying vehicles

50

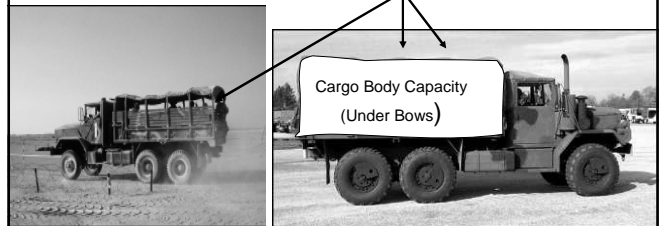
TABLE 2-7 CARGO DECK DIMENSIONS									
Vehicle Type (LIN)	Cargo Deck			Cargo Body Loading Height and Capacity					
	Length (in.)	Width (in.)	Bed Height (in.)	Under Bows (in.)	Bows (ft³)	Top of Side Racks (in.)	(ft³)	Top of Steering Wheel (in.)	(ft³)
2-1/2 Ton M35A2C WWN (X40214)	147.0	88.0	52.0	60.0	443.0-w	37.0	277.0	29.0	217.0

Length (in.) Width (in.) Height (in.)
 Cube= $\frac{147 \times 88 \times 60}{1,728}$
 =443ft³ (Don't forget about 'w' = cubic capacity reduced by 6.6 cubic feet for curve of bows)

51

Truck Bows

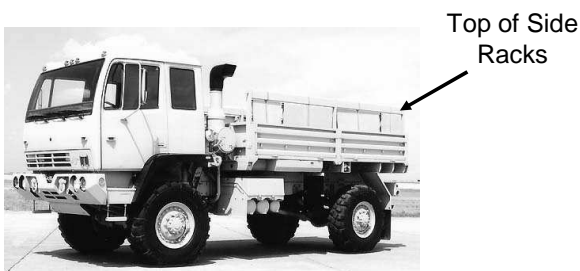
Bows (frame)



M35A3C (2.5 T Truck)

52

Truck Side Racks



M1078 (2.5 T Truck)

53

Chapter 2 Tables 2-16 to 2-26

- Tables 2-16 to 2-25 contains wheel base information
 - Primarily used by upper level planners
 - Seldom used at unit level
- Table 2-26 is a metric conversion table

54

Chapter 3 -- Equipment Characteristics Data

- Contains Equipment Characteristics Data
 - Starts with detailed explanation of the information contained in each column
 - 11 columns of data
- Column One: TOE LIN --Table of Organization & Equipment Line Item Number

55

Chapter 3 Column 1

- Column 1:

- TOE LIN Army
- TOE LIN Navy
- TOE LIN Air Force
- TOE LIN Union (AALPS)
- TOE LIN Fictitious

TOE LIN
(INDEX)
NO

T61494
CB0539
AF2955
YU0285
YA0095

56

Chapter 3 Column 1(Cont)

- Column 1 (Cont):

- TOE LIN number
- "PV" - Preferred Model (generally largest and most current model) & Validated Data (by SDDC TEA) Codes
- "V" - Validated Data

TOE LIN
(INDEX)
NO

A21633
PV 01
PV 03
V 04
V 05

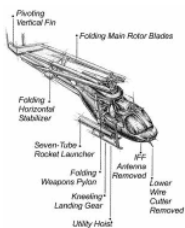
See LIN A21633 on p.3-7

Ref: Para 3-1a, page 3-1

58

Bell OH-580

KIOWA WARRIOR



REDUCED CONFIGURATION FOR TRANSPORTATION (two fit into a C130)

57

Chapter 3 Column 1 (Cont)

- Column 1 (Cont):

- Index No: Identifies different NSNs &/or shipping configuration

TOE LIN
(INDEX)
NO

A21633
PV 01
PV 03
V 04
V 05

See LIN A21633 on p.3-7

Ref: Para 3-1b, page 3-1

59

Chapter 3 Column 2

- Column 2:
- NSN. Identifies a specific equipment model within a LIN



NATL STOCK NO.
(SET)
(TOE LIN)

1520011255476

C
O
M
P

See LIN A21633 on p.3-7

Ref: Para 3-1c, page 3-1

60

Chapter 3 Column 2 (Cont)

- Column 2 (Cont):
- (SET) The TOE LIN in parentheses is the proper TOE LIN to be used for reporting a set

TOE LIN (INDEX) NO	NATL STOCK NO. (SET) (TOE LIN)	VEHICLE COMP	TYPE EQUIP	LIN DESCRIPTION (MODEL) COMPO DESCRIPTION
R93035	(SET)	R	R	RADIO TERMINAL SET
V 03	5820011483976	R	U	AN/TRC-170V3
V 01	6115013199032	R	U	AN/TRC-170V3
V 36	230013469137	R	G	GEN SET DED TRL MTD PU-798 TRK UTIL. HYV HMMVV M1097

Ref: Para 3-1d, page 3-1

61

Chapter 3 Column 3

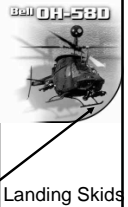
- Column 3: Component. Alphabetic code added to an NSN to identify a disassembled component

Do not use the modified NSN for reporting purposes

See LIN A21633 on p.3-7

Ref: Para 3-1e, page 3-1

NATL STOCK NO. (SET) (TOE LIN)	COMP
1520011255476	A



Landing Skids

62

Chapter 3 Column 4

- Column 4: Vehicle. Code indicates whether vehicle is roadable or non-roadable.
 - “N” = Nonroadable (not suitable for road marching)
 - “R” = Roadable (capable of maintaining 40 mph)



See LIN A21633 on p.3-7 and LIN T07679 on p.3-302

Ref: Para 3-1f, page 3-1

63

VEHICLE
N
R

Chapter 3 Column 5

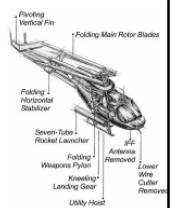
- Column 5: Type Equipment. Numeric code used to differentiate between equipment types:
 - “H” = Aircraft, rotary wing (operational)
 - “K” = All aircraft in reduced configuration



See LIN A21633 on p.3-7

Ref: Para 3-1g, page 3-1/3-2

64

TYPE
EQUIP
H
K

Chapter 3 Column 6

- Column 6:
 - LIN Description: Generic nomenclature assigned a LIN (functional description)
 - Model: OH-58D
 - Component Description: LANDING SKIDS

<-- LIN DESCRIPTION -->
<-- MODEL -->
(- COMPO DESCRIPTION -)

AERIAL SCOUT HELICOPTER
OH-58D
LANDING SKIDS

See LIN A21633 on p.3-7

Ref: Para 3-1h, page 3-2

65

Chapter 3 Column 7

- Column 7: Shipping Configuration:
 - 42 different codes
 - “8” = Flyaway (see 3-7)
 - “F” = Reduced for C-130 Transport (see 3-7)
 - “B” = Operational (Mission configuration) (see 3-394)
 - “C” = Reduced to minimum shipping dimensions IAW the unit's organic maintenance capability (for example, removing canvas tops, frames and bows; securing antennas; etc)

SHIP
CONF
8
F
B
C

See LIN A21633 on p.3-7 and LIN X40009 on p.3-412

Ref: Para 3-1i, pages 3-2 – 3-4

66

Chapter 3 Column 8

• Column 8: Number of Pieces:

- The data in this column indicates the number of identical disassembled components - as detailed in the 'component description' in Column 6
- The dimensions given in column 9 relate to a single item

NO.
PCS
1

See LIN A21633 on p.3-7

Ref: Para 3-1j, page 3-4

67

Chapter 3 Column 9

- Column 9: Dimensions, Weight & Cube for one item as described by 'Model' or 'Component Description' & Shipping Configuration



(FOR ONE ITEM)					
DIMENSIONS			WEIGHT	CUBE	
<---INCHES--->			(LB)	(CU FT)	
LENGTH	WIDTH	HEIGHT			
<---REMARKS--->					
495	420	155	3427	18649	
408	74	106	3110	1852	

420 (Operational width)
74 (Reduced width)

See LIN A21633 on p.3-7

Ref: Para 3-1k, page 3-4

68

Chapter 3 Column 10

- Column 10: Cargo Vehicle Load Limits Weight, Height & Cube



Offroad rated
load capacity
(in pounds)

Height (Cargo
deck + Height
Under Bows
(in inches)

CGO VEH LD LIMITS WEIGHT		
HGT	TOE	CUBE
(INDEX NO)		
5000		
113		450

Cubic capacity 'Under Bows'(in cubic feet)

See LIN X40009 on p.3-413/414

Ref: Para 3-1l, page 3-4

69

Chapter 3 Column 11

- Column 11(Cont): Cargo Load Indicator

- AMC (left to right):

C-130, C-141, C-17,
C-5, KC-10, & KC-135

Indicator:

"C" (certified by the Air Force) or
"X" (qualified for aircraft [will fit])
or blank (not transportable in
specified aircraft)

< C=AF CERTIFIED >									
< X= JCS CRITERIA >									
<----- CGO LOAD IND ----->									
<AMC > <CRAF>									
CCCCCK	DDBB	CTN	CTN	4	CCCH				
1115CC	CC77	20	40	6					
347	11	8144	FT	FT	3				
01	03	077			L				
	5	SN							
CCCC	CCC	N	N	N	R2DA				

See LIN T61494 on p.3-357

Ref: Para 3-1n, page 3-4/3-5

70

Chapter 3 Column 11 (Cont)

- Column 11(Cont):
Cargo Load Indicator

- CRAF (left to right):

DC-8, DC-10,
B-747S & B-747N

Indicator:

C or X or blank

< C=AF CERTIFIED >									
< X= JCS CRITERIA >									
<----- CGO LOAD IND ----->									
<AMC > <CRAF>									
CCCCCK	DDBB	CTN	CTN	4	CCCH				
1115CC	CC77	20	40	6					
347	11	8144	FT	FT	3				
01	03	077			L				
	5	SN							
CCCC	CCC	N	N	N	R2DA				

See LIN T61494 on p.3-357

Ref: Para 3-1n, page 3-4/3-5

71

Chapter 3 Column 11 (Cont)

- Column 11(Cont):
Cargo Load Indicator

- CTN:

20-ft (containers)

Indicator:

Y = Fits

N = Not Fit

< C=AF CERTIFIED >									
< X= JCS CRITERIA >									
<----- CGO LOAD IND ----->									
<AMC > <CRAF>									
CCCCCK	DDBB	CTN	CTN	4	CCCH				
1115CC	CC77	20	40	6					
347	11	8144	FT	FT	3				
01	03	077			L				
	5	SN							
CCCC	CC	N	N	N	R2DA				

See LIN T61494 on p.3-357

Ref: Para 3-1n, page 3-4/3-5

72

Chapter 3 Column 11 (Cont)

- Column 11(Cont):
Cargo Load Indicator

- CTN:
40-ft (containers)

Indicator:

Y = Fits

N = Not Fit

```
< C=AF CERTIFIED >
< X=JCS CRITERIA>
<----- CGO LOAD IND ----->
<AMC > <CRAF>
CCCCCK DDBB CTN CTN 4 CCCH
1115CC CC77 20 40 6
347 11 8144 FT FT 3
01 03 077 L
5 SN
CCCC CC N N R2DA
```

See LIN T61494 on p.3-357

Ref: Para 3-1n, page 3-4/3-5

73

Chapter 3 Column 11 (Cont)

- Column 11(Cont):
Cargo Load Indicator

- 463L (pallet)

Indicator:

Y = Fits

N = Not Fit

```
< C=AF CERTIFIED >
< X=JCS CRITERIA>
<----- CGO LOAD IND ----->
<AMC > <CRAF>
CCCCCK DDBB CTN CTN 4 CCCH
1115CC CC77 20 40 6
347 11 8144 FT FT 3
01 03 077 L
5 SN
CCCC CC N N R2DA
```

See LIN T61494 on p.3-357

Ref: Para 3-1n, page 3-4/3-5

74

Chapter 3 Column 11 (Cont)

- Column 11(Cont):
Cargo Load Indicator
- Cargo Category
Codes

```
< C=AF CERTIFIED >
< X=JCS CRITERIA>
<----- CGO LOAD IND ----->
<AMC > <CRAF>
CCCCCK DDBB CTN CTN 4 CCCH
1115CC CC77 20 40 6
347 11 8144 FT FT 3
01 03 077 L
5 SN
CCC CCC N N N R2DA
```

See LIN T61494 on p.3-357

Ref: Para 3-1n, page 3-4/3-5

75

Chapter 3 Column 11 (Cont)

- Column 11(Cont):
Cargo Load Indicator
- Cargo Category
Codes

C(1): Type
Equipment

```
< C=AF CERTIFIED >
< X=JCS CRITERIA>
<----- CGO LOAD IND ----->
<AMC > <CRAF>
CCCCCK DDBB CTN CTN 4 CCCH
1115CC CC77 20 40 6
347 11 8144 FT FT 3
01 03 077 L
5 SN
CCC CCC N N N R2DA
```

See LIN T61494 on p.3-357

Ref: Para 3-1n, page 3-4/3-5

76

Chapter 3 Column 11 (Cont)

- Column 11(Cont):
Cargo Load Indicator
- Cargo Category
Codes

C(2): Indicates if
item is air
transportable

```
< C=AF CERTIFIED >
< X=JCS CRITERIA>
<----- CGO LOAD IND ----->
<AMC > <CRAF>
CCCCCK DDBB CTN CTN 4 CCCH
1115CC CC77 20 40 6
347 11 8144 FT FT 3
01 03 077 L
5 SN
CCC CCC N N N R2DA
```

See LIN T61494 on p.3-357

Ref: Para 3-1n, page 3-4/3-5

77

Chapter 3 Column 11 (Cont)

- Column 11(Cont):
Cargo Load Indicator
- Cargo Category
Codes

C(3): Can/Cannot
be containerized

```
< C=AF CERTIFIED >
< X=JCS CRITERIA>
<----- CGO LOAD IND ----->
<AMC > <CRAF>
CCCCCK DDBB CTN CTN 4 CCCH
1115CC CC77 20 40 6
347 11 8144 FT FT 3
01 03 077 L
5 SN
CCC CCC N N N R2DA
```

See LIN T61494 on p.3-357

Ref: Para 3-1n, page 3-4/3-5

78

Chapter 3 Column 11 (Cont)

- Column 11(Cont):
Cargo Load Indicator
- Cargo Category Codes

H: Weight and dimensions (<35' or >35')

```
< C=AF CERTIFIED >
< X=JCS CRITERIA>
<----- CGO LOAD IND ----->
<AMC > <CRAF>
CCCCCK DDBB CTN CTN 4 CCCH
1115CC CC77 20 40 6
347 11 8144 FT FT 3
01 03 077 L
5 SN
CCC CCC N N N R2DA
```

See LIN T61494 on p.3-357

Ref: Para 3-1n, page 3-4/3-5

79

Chapter 3 Column 11 (Cont)

- What did our CCCH code of "R2DA" mean?
 - First: wheeled vehicle, roadable
 - Second: oversized exceeding 463L pallet size
 - Third: cannot be containerized (too wide)
 - Fourth: under 5 tons - smaller than 35' in any dimension

80

Appendix B - Cross Reference

- Appendix B:
 - Cross-reference NSN to TOE LIN
- First column is NSN - listed in ascending sequence
- Second Column is corresponding TOE LIN

NSN	TOE LIN
2320010907797	CB0730
2320010907828	X61655
2320010907831	X42064
~~~~~	
Five columns per page!	

81

### Appendix B - Cross Reference (Cont)

- Two listings for NSN 2320011077155
- First is CB0360
  - What does this TOE LIN tell you?
  - Navy vehicle
- Next TOE LIN is the Army vehicle (M998)

NSN	TOE LIN
2320010907797	CB0730
2320010907828	X61655
2320010907831	X42064
~~~~~	~~~~~
2320011016752	CB0644
2320011077153	T05096
2320011077155	CB0360
2320011077155	T61494
2320011077156	T61562

See pg B-8

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Appendix C - Cross Reference

Appendix C:

- Cross-reference equipment model designation to TOE LIN
- Contains more information than Appendix B
 - Provides item description, the shipping configuration, the cargo group code, the length and width, and the empty and loaded height and weight

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Appendix C - Cross Reference (Cont)

MODEL	DESCRIPTION	LIN - INDEX
M983 WWN	TRUCK TRACTOR TACT8X8	T88677 02
M983 WWN	TRUCK TRACTOR TACT8X8	T88677 16
M983/M901	TRK TRAC/LCHR STA GM	YA0228 01
~~~~~	~~~~~	~~~~~
M997A1	TRK AMB 4 LITTER 4X4	T38844 14
M998	TRK UTIL CRG/TRP CARR	T61494 01
M998	TRK UTIL CRG/TRP CARR	T61494 04
M998	TRK UTIL CRG/TRP CARR	T61494 15
~~~~~	~~~~~	~~~~~

See pg C-79

84

UMD Reporting Procedures

- TB 55-46-1, equipment characteristics data listings are designed to facilitate preparation of UMD reports
- Data reflects specified shipping configurations
 - Use only for planning purposes
- FORSCOM Reg 55-2 requires use of TC-ACCIS / TC AIMS II for reporting UMD to FORSCOM

85

UMD Reporting Procedures (Cont)

- Use of LIN & INDEX NO: When combined & properly reported, the computer (TC-ACCIS or TC-AIMS II) generates data listed to the right of the INDEX NO
- Errors in reporting either data element will result in the computer generating erroneous (BAD) data

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Summary

Chapter 1 - Purpose, Definitions, Data Specifications

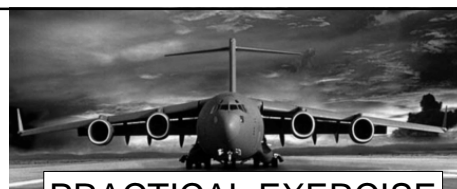
Chapter 2 - Tables for Cargo Deck Dimensions

Chapter 3 - Equipment Characteristics (items are listed by TOE LIN)

Appendix B - National Stock Number to TOE LIN

Appendix C - Model designation to TOE LIN

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PRACTICAL EXERCISE



Practical Exercise Tips

- You will be given one of three pieces of information:
 - 13 digit number - it is a NSN - use Appendix B (NSNs listed numerically) to find the LIN and then refer back to Chap 3
 - 6 alphanumeric characters - most likely a LIN - look it up in Chapter 3 (LINS listed alphanumerically)
 - Variable number (other than six) of alphanumeric characters - most likely a Model Designation - look it up in Appendix C (models listed alphanumerically) - refer back to Chap 3 using the LIN for this model to find additional information (if required)
- Cargo Deck Dimensions - refer to the tables in Chap 2

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TC-AIMS II - Equipment List OEL Report - Unit Equipment List

FOR OFFICIAL USE ONLY
Page 1 of 12

Date: 20041215

Equipment
UIC: WAD1TD Unit Name: 0041 IN BN 02 HH

Shipment Unit Number	Echelon AJUN	LIN	LIN Index	Dimensions in inches			Square Feet	Cubic Feet	Item Weight in Lbs.	Planned Loaded Weight	Actual Loaded Weight	TP PK	Water/Air Com Cd	Water/Air			W A I V E R	CGO CAT	H L C	M-Ton	S-Ton		
				Length	Width	Height								T C C	S H C	M P E							
D0001	00	/	D12087	07	192	100	84	133.33	933.33	19996	22496	19996	VE	876	Z	9	K	N	A2	D	B	23.33	10
UIC: WAD1TD Equipment Desc: CARRIER PERS FTRAC Model: M113A1 Bumper Number: TNG 1													V	Z	Serial Number:11								
D0002	00	/	J81750	02	258	117	104	209.63	1816.75	40940	41840	40940	VC	876	Z	9	K	N	A2	D	C	45.42	20.47
UIC: WAD1TD Equipment Desc: INFANTRY FIGHTING VEH Model: M2 Bumper Number: TNG 2													V	Z	Serial Number:22								
D0003	00	/	J81750	02	258	117	104	209.63	1816.75	40940	41840	40940	VC	876	Z	9	K	N	A2	D	C	45.42	20.47
UIC: WAD1TD Equipment Desc: INFANTRY FIGHTING VEH Model: M2 Bumper Number: TNG 3													V	Z	Serial Number:33								

TABLE 5-1
WATER COMMODITY CODES (WCOMMCDE)

CATEGORY	CODE	DEFINITION
Class A Explosive	418	Mass detonating items subject to instantaneous explosion of the entire quantity. Compatibility Group 1.1A.
Class B Explosives	419	Items which generally function by rapid combustion rather than detonation and include some explosive devices. Compatibility Group 1.1B, 1.2B, 1.4B.
<i>NOTE: The above two codes are not in MILSTAMP because they are general descriptions. Action is in progress to include the codes in MILSTAMP.</i>		
Other Hazardous Items	436	Hazardous items not otherwise specified.
Small Arms	680	Ammunition .60 caliber and smaller. Ammunition Compatibility Group 1.1C, 1.2C, 1.3C, 1.4C.
General Cargo	700	Miscellaneous unit equipment not classified as hazardous cargo.
Floating Craft	804	Self/non-self-propelled boats and barges.
Artillery, SP	813	Artillery, wheeled or tracked that is self-propelled.
Artillery, Towed	816	Artillery, wheeled or tracked that is towed.
Tank, Combat	864	Tank, combat.
Vehicles, Wheeled	867	Wheeled vehicles, self-propelled, 2-1/2 SP ton capacity or less.
Sedans	879	Sedans.
Vehicles, tracked	876	Tracked or half-tracked vehicles.
Vehicles, wheeled SP	882	Wheeled vehicles, self-propelled, capacity greater than 2-1/2-tons.
Construction equip	885	Construction vehicles.
Materials Handling Equipment (MHE)	891	Vehicles designated for materials handling. Includes mobile cranes.
Trailers, wheeled	892	Trailers and semi-trailers 2-1/2 ton capacity or less.
Trailers, wheeled	893	Trailers and semi-trailers capacity greater than 2-1/2 ton.
Aircraft	900	Rotary/Fixed wing aircraft - reduced or operational configuration.

FORSCOM Regulation 55-2

c. The type equipment code for a given item is directly related to the commodity code. The

relationship is indicated below:

<u>Water Commo- dity Codes</u>	<u>Type Equip- ment Codes</u>	<u>Water Commo- dity Codes</u>	<u>Type Equip- ment Codes</u>
418	M	867	1 or 3
419	N	879	2
436	P	876	C
680	Q or R	882	4
700	L, S, T, U, V, Y or X	885	8 or 9
804	G	891	0 or 5
813	E	892	6
816	F	893	7
864	D	900	H, J or K

TABLE 5-2
TYPE CARGO CODES (TCC)

CODE	DEFINITION
F	Explosive Class C, UN Class 1 (Explosive C Label).
G	Nonflammable Compressed Gases, UN Class 2 Nonflammable, Gas Label except oxygen requires an Oxidizer Label and fluorine requires poison Oxidizer Labels).
I	Explosives Class A, UN Class 1 (Explosive A Label).
J	Explosives Class B, UN Class 1 (Explosive B Label).
O	Flammable Compressed Gas, UN Class 2 (Flammable Gas Label).
R	Flammable Liquids, UN Class B (Flammable Liquids Label).
U	Combustible Liquids (No Label).
V	Miscellaneous Hazardous Material UN Class 9 (No Label).
W	Corrosive Materials, UN Class 8 (Corrosive Label). Label).
X	Flammable Solids, UN Class 4 (Flammable Solid.
Z	No Special Type of Cargo Code Applicable.

**TABLE 5-3
SPECIAL HANDLING CODES (SHC)**

CODE	DEFINITION
2	Classified Materials: Official information or matter in any form or of any nature which enquires protection in the interest of national security.
4	Hazardous and Sensitive Cargo: Small Arms; ammunition; and explosives which are a definite threat to public safety and can be used by militant, revolutionary, criminal or other elements for civil disturbances, domestic unrest, or criminal actions. Also includes hazardous items such as flammable liquids, radio active, and other like items.
9	No special handling required. All categories of equipment not defined above (as either 2 or 4).

**TABLE 5-4
MODE TO PORT OF EMBARKATION (MPE)**

CODE	DEFINITION
A	MTMC Commercial Truck/Trailer load to the SPOE/MOB Station.
E	Commercial Bus.
F	Deployment by AMC Air. Not a surface move.
K	Rail to the SPOE/MOB station. Includes the contemplated use of either commercial or military owned rail assets.
O	Organic Military Air Movement to the SPOE/MS. Includes all self-deployable Army aircraft.
W	Water.
1	Unit Organizational Transportation (convoy) to the SPOE/MOB station. Includes the use of unit organic transportation (single lift or shuttle movement) assets, other than aircraft, and assets from other than the installation TMP that have been designated to provide lateral transportation support.
2	Barge.
9	Installation arranged transportation to the SPOE/MS.
<p>NOTE: The MPE code indicates the method of shipment used from the origin shipping location to the port of embarkation. Transportation officers at installations and STARC's are authorized to change the mode codes requested by their supported units based upon sound traffic management principles and local procedures.</p>	

**TABLE 5-5
TYPE PACK CODES (TPC)**

The type pack codes indicate the manner in which an item is packaged for shipment. The codes consist of two characters.

CODE	DEFINITION
BD	Bundle.
BX	Box.
PC	Piece describe the type pack of any item that does not meet the criteria of any other type pack.
PT	Palletized unit load.
VE	Non fully operational aircraft or vehicles which are not self-propelled.
VO	Fully operational aircraft or self-propelled vehicles capable of being driven for short distances (drivable vehicle).
XX	CONEX, Type I or Type II, or UDSC.
YC	MILVAN and other CONTAINERS.
ZX	SEAVAN.
AIR DROP PACKAGING CODES	
W1	A22 Container.
W2	40 X 48 standard pallet load.
W3	54 X 88 (463L) palletized.
W4	108 X 88 (463L) palletized.
W5	Platform, 8 feet.
W6	Platform, 12 feet.
W7	Platform, 16 feet.
W8	Platform, 20 feet.
W9	Platform, 24 feet.

**TABLE 5-5
TYPE PACK CODES (TPC) (Continued)**

WA	Platform, other than above.
WB	Bundles rigged for airdrop.
<i>NOTE: The above Airdrop codes can only be used with prior permission from the Systems/COMPASS Office, Forces Command and only in connection with Type equipment (T/E) code "L".</i>	

**TABLE 5-6
TYPE EQUIPMENT CODES (TE)**

CODE	DEFINITION
0	Vehicle, wheeled (not self-propelled), Materials Handling Equipment (MHE).
1	Vehicles, wheeled (self-propelled), 1/2 ton or less.
2	Vehicles, wheeled (self-propelled), sedan.
3	Vehicles, wheeled (self-propelled), 2-2 1/2 ton or less.
4	Vehicles, wheeled (self-propelled), greater than 2-1/2 ton.
5	Vehicles, wheeled (self-propelled), MHE.
6	Vehicles, wheeled (not self-propelled), 2-1/2 ton or less.
7	Vehicles, wheeled (not self-propelled), greater than 2-1/2 ton.
8	Vehicles, wheeled (self-propelled), construction equipment.
9	Vehicles, wheeled (not self-propelled), construction equipment.
C	Vehicles, tracked or half-tracked except D or E.
D	Tank Combat.
E	Artillery weapon, self-propelled.
F	Artillery weapon towed, not self-propelled.

TABLE 5-6
TYPE EQUIPMENT CODES (TE) (Continued)

CODE	DEFINITION
G	Floating craft self-propelled (boats and barges) except amphibious vehicles that are included under the appropriate numeric code.
H	Aircraft, rotary wing (operational).
J	Aircraft, fixed wing (operational).
K	All aircraft in a reduced configuration (<i>NOTE: Disassembled components must be reported separately as "Special Handling Cargo"</i>).
L	Airdrop (<i>NOTE: Equipment or supplies rigged or packaged for airdrop must be reported as "Special Handling Cargo"</i>).
M	Class A explosives. Compatibility Group 1.1A.
N	Class B explosives. Compatibility Group 1.1B, 1.2B, 1.4B.
P	Other hazardous items.
Q	Ammunition and explosives over .60 caliber.
R	Small arms ammunition .60 and less (Small Arms Ammo). Compatibility Group 1.1C, 1.2C, 1.3C, 1.4C.
S	Yellow TAT organizational equipment and supplies. (<i>NOTE: Must accompany troops and be accessible during the travel</i>).
T	Red TAT organizational equipment, accompanying supplies and baggage (<i>NOTE: Must be available to troops upon arrival at destination</i>).
U	Equipment other than vehicles (<i>NOTE: NOT TAT, includes equipment which need not be available to troops upon arrival at destination</i>).
V	Airdrop or packaged for airdrop.
X	Red TAT Baggage (<i>Note: Personnel "Hold" Baggage such as footlockers</i>).
Y	Yellow TAT personal "accompanying" baggage.

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VEHICLES

ED R = ROADABLE

N = NON ROADABLE

DATA STANDARD CHARACTERISTICS FOR ARMY EQUIPMENT

Y = VALIDATED N = NON VALIDABLE		DH STANDARD CHARACTERISTICS FOR UNIT EQUIPMENT									
TOE LIN (INDEX) NO	NATL STOCK NO (SET) (TOE LIN)	V P	T Y	S H	I P	(-LIN DESCRIPTION--) (---MODEL---) (-COMPO DESCRIPTION-)	C NO	D PCS	(-FOR ONE ITEM)- DIMENSIONS (INCHES) LENGTH WIDTH HEIGHT --(REMARKS)--	CGO VEH LD LIMITS WEIGHT HGT CUBE TOE LIN INDEX NO	(X=JCS CRITERIA) (---CGO LOAD IND---) (AMC) (CRAF)
FM0006 P 01	0000000000000000 REMARKS	R 2	2			CHEVROLET SEDAN LUMINA-94 LUMINA-94			NONE 199 81 54 DISASTER RELIEF ITEM	504	XXXXC X X Y Y N R2BA (DETAIL INDEX 01)
FM0007 P 01	0000000000000000 REMARKS	R 3	3			DODGE B PAX VAN RAM-250-91 RAM-250-91			NONE 199 81 68 DISASTER RELIEF ITEM	635	XXXXC X X Y Y N R2BA (DETAIL INDEX 01)
FM0009 PV 01	39900008924394 REMARKS	T 2	2			RED TAT BAGGAGE NONE			NONE 40 48 6 65	7	CCCCC CCCC Y Y Y J3BA (DETAIL INDEX 05)
PV 02	39900008924394 REMARKS	T 2	2			4 ITEMS			40 48 17 365	19	CCCCC CCCC Y Y Y J3BA (DETAIL INDEX 05)
PV 03	39900008924394 REMARKS	T 2	2			8 ITEMS			40 48 29 665	33	CCCCC CCCC Y Y Y J3BA (DETAIL INDEX 05)
PV 04	39900008924394 REMARKS	T 2	2			12 ITEMS			40 48 41 965	45	CCCCC CCCC Y Y Y J3BA (DETAIL INDEX 05)
PV 05	39900008924394 REMARKS	T 2	2			16 ITEMS			40 48 53 1265	59	CCCCC XXXX Y Y Y J3BA (DETAIL INDEX 05)
FM0010 PV 01	0000000000000000 REMARKS	R 7	7			REFRIGERATOR TRAILER 28-FT COMM 28-FT COMM			NONE 337 102 160 VEHICLE FOR EMERGENCY DISASTER TEAM	3183	N N N R0DB (DETAIL INDEX 01)
FM0011 PV 01	0000000000000000 REMARKS	R 7	7			EMERGENCY OPERATIONS 40-FT COMM 40-FT COMM			NONE 575 102 153 VEHICLE FOR EMERGENCY DISASTER TEAM	5193	X N N N R1DK (DETAIL INDEX 01)
FM0012 PV 01	0000000000000000 REMARKS	R 2	2			CHEVY SEDAN CORSIKA-96 CORSIKA-96			NONE 176 78 56 DISASTER RELIEF ITEM	445	XXXXC X X Y Y N R2BA (DETAIL INDEX 01)
FM0013 PV 01	0000000000000000 REMARKS	R 2	2			DODGE SEDAN STRATUS-96 STRATUS-96			NONE 182 79 54 DISASTER RELIEF ITEM	450	XXXXC X X Y Y N R2BA (DETAIL INDEX 01)
FM0014 PV 01	0000000000000000 REMARKS	R 3	3			FORD 7 PASSENGER VAN CLUB WAGON-9 CLUB WAGON-9			NONE 211 80 79 DISASTER RELIEF ITEM	772	XXXXC X Y Y N R2BA (DETAIL INDEX 01)

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VEHICLES

LEGEND

P = PREFERRED R = ROADABLE

V = VALIDATED N = NON ROADABLE

DA STANDARD CHARACTERISTICS FOR ARMY EQUIPMENT

TOE LIN (INDEX) NO	NATL STOCK NO (SET) (TOE LIN)	T V E H C I E D C D M L P E T	Y P E H C I E D C D M L P E T	<--LIN DESCRIPTION--> <---MODEL-----> <-COMPO DESCRIPTION-->	S H I P C N O P C S N F	<-----> <---(FOR ONE ITEM)-----> <---DIMENSIONS-----> <---(INCHES)-----> <---LENGTH WIDTH HEIGHT-----> <---(REMARKS)----->	CGO VEH LD LIMITS WEIGHT HGT CUBE TOE LIN (INDEX NO)	(C=AF CERTIFIED) (X=JCS CRITERIA) (---CGO LOAD IND-----> (AMC) <CRAF> COCCKK DDBB CTN CTN 4 CCHH 1115CC CC77 20 40 6 347 11 8144 FT FT 3 01 03 077 5 SN
T61239				TRK TRACTOR: MTV W/ED		NONE		
V 02	2320013554332	R 4	R 4	M1088 WOWN		282 96 106 20393	1661	CCCC
V 14	2320013554332	R 4	R 4	M1088 WOWN		282 96 106 20393	1661	CCCC
V 15	2320013554332	R 4	R 4	M1088 WOWN		282 96 112 20393	1755	CC
PV 16	2320014473893	R 4	R 4	M1088A1 WOWN		284 96 112 20423	1768	CC
PV 17	2320014473893	R 4	R 4	M1088A1 WOWN		284 96 106 20423	1673	CCCC
V 18	2320014473893	R 4	R 4	M1088A1 WOWN		284 96 106 20423	1673	CCCC
V 19	2320014473893	R 4	R 4	M1088A1 WOWN		284 96 112 20423	1768	CC
T61307				TRK TRACTOR: MTV W/EQP		TM 9-2320-366-10		
V 01	2320013601892	R 4	R 4	M1088 WOWN		282 96 112 21184	1755	CC
V 02	2320013601892	R 4	R 4	M1088 WOWN		282 96 106 21184	1661	CCCC
V 13	2320013601892	R 4	R 4	M1088 WOWN		282 96 106 21184	1661	CCCC
V 14	2320013601892	R 4	R 4	M1088 WOWN		282 96 112 21184	1755	CC
PV 15	2320014473900	R 4	R 4	M1088A1 WOWN		284 96 112 21400	1768	CC
PV 16	2320014473900	R 4	R 4	M1088A1 WOWN		284 96 106 21400	1673	CCCC
V 17	2320014473900	R 4	R 4	M1088A1 WOWN		284 96 106 21400	1673	CCCC
V 18	2320014473900	R 4	R 4	M1088A1 WOWN		284 96 112 21400	1768	CC
T61494				TRK UTIL CRG/TRP CARR		TM 9-2320-280-10		
V 01	2320011077155	R 3	R 3	M998		187 96 74 5280	769	CCCC
V 02	2320011077155	R 3	R 3	M998T		190 96 96 5800	1014	CCCC
V 03	2320011077155	R 3	R 3	M998T		190 84 96 5800	887	CCCC
V 04	2320011077155	R 3	R 3	M998T		187 84 53 5280	482	CCCC
V 13	2320011077155	R 3	R 3	M998		FUEL CAPACITY 24.5 GAL DIESEL		CCCC
15	2320011077155	R 3	R 3	M998		SEC LIN FOR C99531, R14284, & YA0468 - DO NOT		DELETE
29	2320011077155	R 3	R 3	M998		194 96 96 5800	1035	CCCC
V 47	2320011077155	R 3	R 3	M998		INCLUDES BRUSH GUARD KIT & (B) PILLARS	96 104	CCCC
						INCLUDES W/SHELTER KIT PER 10TH MTN DIV	96 104	CCCC
						MODIFIED FLOW VELOCITY AIRDROP	94 155	CCCC
						215 108 87 10500	1169	CCC
						RIGGED FLOW VELOCITY AIRDROP		
						INCLUDES ACCOMPANYING LOAD		
						F/AALPS PLANNING PURPOSES ONLY		
						187 84 53 5280	482	CCCC
							53 51	CCCC

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VEHICLES

LEGEND

P = PREFERRED R = ROADABLE
V = VALIDATED N = NON ROADABLE

DA STANDARD CHARACTERISTICS FOR ARMY EQUIPMENT

TOE LIN (INDEX) NO	NATL STOCK NO (SET) (TOE LIN)	T Y P E	V E H I C L E	DESCRIPTION	S H I P	NO PCS	REMARKS	CGO VEH LD LIMITS WEIGHT HGT CUBE TOE LIN	(C=AF CERTIFIED) (X=JCS CRITERIA) (CGO LOAD IND-----)
X39447	REMARKS	3	TRK	CGO TAC 1-1/4-TON	C		TM 9-2320-266-10 W/60 AMP & COMM KIT	2500	(DETAIL INDEX 02) (DETAIL INDEX 02)
V 15	2320005798957	R 3	M882		C		FUEL TANK CAP 20 GAL GAS	74 167	CCCC CCC N N N R2DA
V 17	2320005798957	R 3	M882		C			74 167	CCCC CCC Y Y N R2BA
X39450	REMARKS	3	TRK	CGO TAC 1-1/4-TON	B		TM 9-2320-266-10 W/60 AMP & COMM SHELTER TIEDOWN KIT	2500	(DETAIL INDEX 02) (DETAIL INDEX 02)
PV 01	2320005798959	R 3	M883		C			74 167	CCCC CCC N N N R2DA
PV 02	2320005798959	R 3	M883		C			74 167	CCCC CCC Y Y N R2BA
V 15	2320005798959	R 3	M883		C		FUEL CAPACITY 20 GAL MOGAS	74 167	CCCC CCC N N N R2DA
V 17	2320005798959	R 3	M883		C			74 167	CCCC CCC Y Y N R2BA
X39453	REMARKS	3	TRK	CGO TAC 1-1/4-TON	B		TM 9-2320-266-10 W/100 AMP & COMM SHELTER TIEDOWN KIT	2500	(DETAIL INDEX 02) (DETAIL INDEX 02)
PV 01	2320005798985	R 3	M884		C			74 167	CCCC CCC N N N R2DA
PV 02	2320005798985	R 3	M884		C			74 167	CCCC CCC Y Y N R2BA
V 17	2320005798985	R 3	M884		C		FUEL CAPACITY 20 GAL MOGAS	74 167	CCCC CCC N N N R2DA
V 19	2320005798985	R 3	M884		C			74 167	CCCC CCC Y Y N R2BA
X40009	REMARKS	3	TRK	CARGO 2-1/2-TON	B		TM 55-2320-209-15-1	5000	(DETAIL INDEX 02) (DETAIL INDEX 13)
V 01	2320000771614	R 3	M35A2		C			113 450	CC C N N N R1DB
V 02	2320000771614	R 3	M35A2		C			81 277	CCCC C N N N R2DB
V 13	2320000771614	R 3	M35A2		C		10X3 02 04 FUEL TANK CAP 50 GAL MOGAS	115 450	CC C N N N R1DB
16	2320000771614	R 3	M35A2		D		WITH MACHINE GUN RING MOUNT INSTALLED		CC C N N N R1DB
21	2320000771614	R 3	M35A2		D				CC C N N N R1DB
V 25	2320000771614	R 3	M35A2		D		W/SKID MTD SHELTER		CCCC (DETAIL INDEX 21)
V 28	2320000771614	R 3	M35A2		G		WOOD SHELTER INST FT LEWIS, WA		CCCC (DETAIL INDEX 25)
V 29	2320000771614	R 3	M35A2		G			113 450	CC C N N N R1DB
V 31	2320000771614	R 3	M35A2		G		W/ARTIC KIT INSTALLED		CCCC (DETAIL INDEX 29)
V 41	2320000771614	R 3	M35A2		R			81 277	CCCC C N N N R2DB

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U.S. Army Transportation School
Deployment and Deployment Systems Department
Strategic Deployment Division

“UNIT MOVEMENT DATA”

PRACTICAL EXERCISE

ACTION: Construct Unit Movement Data

CONDITION: Using TB 55-46-1, FORSCOM Reg 55-2 and class notes.

STANDARD: Correctly construct Unit Movement Data (UMD)

- A. Requirement: Utilize TB 55-46-1 to obtain unit movement data: Using TB 55-46-1, find the information requested for each piece of equipment. Unless otherwise stated, the information requested is for the operational configuration.

1. **ITEM: X39453 19** **ARMY MODEL NO.:** _____

NOMENCLATURE _____ LENGTH _____

WIDTH _____ HEIGHT _____ WEIGHT _____ CUBE _____

CARGO VEHICLE LOAD LIMITS

WEIGHT _____ HEIGHT _____ CUBE _____

REFERENCE: _____

2. **ITEM: S70159 08 FIND: C141 TRANSPORTABLE?** _____

REFERENCE: _____

3. **ITEM: M934 TRUCK VAN EXP 5-ton, (REDUCED CONFIGURATION):**

LIN _____ INDEX _____ LENGTH _____ WIDTH _____

HEIGHT _____ WEIGHT _____ CUBE _____

REFERENCE: _____

4. **ITEM: 5895 01 051 9427:**

LIN _____ INDEX 05 NOMENCLATURE _____

LENGTH _____ WIDTH _____ HEIGHT _____ WEIGHT _____

CUBE _____ C141 TRANSPORTABLE? _____

REFERENCE: _____

5. **ITEM: S70159 03, CARGO DECK DIMENSIONS:**

LENGTH _____ WIDTH _____ BED HEIGHT _____

REFERENCE: _____

6. **ITEM: CONTROL VAN MODEL NUMBER: NONE**

LIN: _____ INDEX _____ LENGTH _____ WIDTH _____ HEIGHT _____

WEIGHT _____ CUBE _____ C141 TRANSPORTATBLE? _____

REFERENCE: _____

7. **In TB 55-46-1, chapter 1, the weight of a surface vehicle (less heavy armor vehicle/tank) includes which of the following? (mark line) (can have more than one answer).**

- a. _____ Basic Issue Items (BII)
- b. _____ Fuel tank $\frac{3}{4}$ full
- c. _____ Payload of vehicle
- d. _____ Crew weight
- e. _____ On Equipment Material (OEM)

REFERENCE: _____

8. **Will a military vehicle that is 102 inches long, 88 inches wide, 42 inches high, and weighing 3,500 pounds be found in TB 55-46-1?**

YES _____ NO _____

REFERENCE: _____

9. **What are the cargo deck dimensions of a M871 22-1/2 ton stake semitrailer?**

Length: _____ Width: _____ Capacity (cu ft): _____

REFERENCE: _____

10. **How many cubic feet of cargo can you get in an LCU 1646 if you load it to the top of the hull?**

_____ cubic feet

REFERENCE: _____

11. Find the LIN, index number, dimensions, and weight for the following equipment.

a. **M981 Carrier Pers F/Track (operational):**

LIN: _____ Index No: _____

Length: _____ Width: _____ Height: _____ Weight: _____

REFERENCE: _____

b. **M35A2C (reduced IAW AR 220-10)**

LIN: _____ Index No: _____

Length: _____ Width: _____ Height: _____ Weight: _____

REFERENCE: _____

c. **Patriot (NSN 1440-01-240-9092)**

LIN: _____ Index No: _____

Length: _____ Width: _____ Height: _____ Weight: _____

Is It C -141 transportable? _____

REFERENCE: _____

12. Your boss asks if an item with a National Stock Number (NSN) of 5420-00-889-2020 could be transported on a C5. He also wants to know the LIN, model name, and nomenclature for the above NSN.

LIN _____ INDEX 01 MODEL _____

NOMENCLATURE: _____

Is It C-5 transportable? _____

REFERENCE: _____

13. **ITEM: X40214 01 ARMY MODEL NO.:** _____

NOMENCLATURE _____ LENGTH _____

WIDTH _____ HEIGHT _____ WEIGHT _____ CUBE _____

VEHICLE LOAD LIMITS

WEIGHT _____ HEIGHT _____ CUBE _____

REFERENCE: _____

14. Identify the following Type Pack Codes:

“PT” _____

“VO” _____

“VE” _____

REFERENCE: _____

15. What does Water Commodity Code/Type Cargo Code/Special Handling Code “680F4” identify?

_____/_____/_____

REFERENCE: _____

HAZARDOUS CARGO ORIENTATION

UMODA04
TBOLC 500-500-18
MWOBC 882X1A10

1

References

FM 4-01.011 (Unit Movement Operations)

Code of Federal Regulations - 49 - Transportation
(Parts 100 to 185)

TM 38-250, *Preparing Hazardous Materials for Military Shipments*

International Air Transport Association - Dangerous Goods Regulation (IATA DGR)

International Maritime Dangerous Goods Code (IMDGC)

Current Emergency Response Guide 2004

2

Hazardous Material Definition

"A substance or material which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety and property when transported in commerce... The term includes hazardous substances, hazardous wastes, marine pollutants..."

Title 49, Code of Federal Regulations

3

Definition of a HAZMAT Employee

- A hazardous materials employee is any person "...who directly affects hazardous materials transportation safety..."
 - Loads, unloads, or handles hazardous material;
 - Prepares hazardous materials for transportation;
 - Is responsible for the safety of transporting hazardous materials; or

4

Definition of a HAZMAT Employee (Cont)

- Operates a vehicle used to transport hazardous materials."
- What does this mean to you as UMO and to personnel in your unit? Any one who handles, packages or ships any hazardous material is considered an employee.

Title 49, Code of Federal Regulations

5

Definition of a HAZMAT Employer

- A hazardous materials employer is defined as "a person who uses one or more of his employees in connection with:
 - Transporting hazardous materials ... Causing them to be transported or shipped in commerce...
 - This term includes any department, agency ... of the United States."

6

Definition of a HAZMAT Employer (Cont)

- You, as the UMO, become an “employer” when you direct troops to load out a vehicle or container containing HAZMAT.
- Make sure you know what unit personnel must do to correctly handle, package and certify HAZMAT.

7

HAZMAT Awareness

- The minimal level of training established by DOT requires HAZMAT employees to:
 - Recognize & identify hazardous materials shipments
 - Understand the numeric hazard class numbering system
 - Understand the hazards presented by the nine United Nations (UN) hazard classes & their subdivisions



8

HAZMAT Awareness (Con't)

- Although the UMO can not be the HAZMAT certifier, the UMO must be aware of dangerous or potentially dangerous materials the unit is handling, shipping or storing
- Something as simple as a variety of consumer commodities could be potentially dangerous
 - Many “off the shelf” items from WD-40 to aftershave are classified by DOT as “Hazardous Materials”

9

Penalties for Non-Compliance -- Civil

- “Knowingly” violating the regulations
 - Making an “honest” mistake, i.e. failing to know something that should have been known, or failing to catch the error even if known
 - For example, one shipment has an incorrect label
- Fine: \$275 to \$50,000 dollars per day per every error or violation (para 107.329)

10

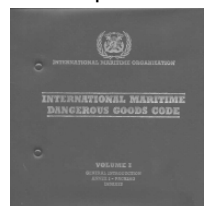
Penalties for Non-Compliance -- Criminal

- “Willfully” violating the regulations
 - Making a conscious decision not to follow the rules
 - + Example: Deliberately concealing or mis-declaring a shipment of hazardous material
- This is a *felony* offense & could result in fines applicable under title 18 USC or up to 5 years in prison or Both (para 107.333)

11

Regulation Conflicts

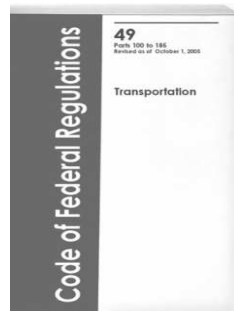
- Always consult regulation for specific mode of transportation to be used to avoid conflicts



12

49 CFR

- Code of Federal Regulations for the transportation of hazardous material
- This publication is commonly referred as CFR 49



13

49 CFR -- Hazardous Material Table

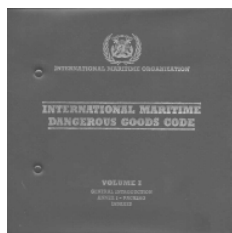
§ 172.101 HAZARDOUS MATERIALS TABLE

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Number	PG	Label Codes	Special provisions	Packaging (§173.24)			Quantity limitations		Vessel class	
							Excep-tions	Non-bulk	Bulk	Passenger aircraft	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Alcohols, see § 173.130												
	Alcandromethylamines												
	Accumulators, electric, see § 173.159												
	Accumulators, pneumatic, or hydraulic (containing non-flammable gas)	2.2	NA1960		2.2		300	300	None	No limit	No limit	A	
	Acetic acid		UN1088	I	3		77	190	202	242		5 L	60 L E
	Acetic anhydride		UN1089	I	3		A3, B16, 720, 729	None	202	242		30 L E	60 L E
	Acetic anhydride, ammoniacal		UN1581	III	8		155	204	242		200 kg		
	Acetic anhydride, anhydrous		UN1582	III	8		155	204	242		200 kg		
	Acetic acid, glacial or Acetic acid solution, with more than 80 percent acid, by mass		UN2789	I	3		A3, ME, AT, 82, 83	190	202	242	60 L	200 L A	34
	Acetic acid solution, not less than 70 percent but not more than 80 percent acid, by mass		UN2790	I	8		A3, ME, AT, 82, 83	154	202	242	1 L	30 L A	
	Acetic acid solution, not less than 70 percent but not more than 80 percent acid, by mass		UN2790	III	8		79	154	202	242	5 L	60 L A	

14

International Maritime Dangerous Goods Code (IMDGC)

- Regulates International HAZMAT water shipments



15

GENERAL INDEX

SUBSTANCE OR ARTICLE	IMDG CODE PAGE	UN NO.	CLASS	Packaging Group	Subsidiary Risk Label(s)	EmS No.	MFG. TAG No.
ACETALDEHYDE ^a	3101	1088	3	I	-	3-608	430
ACETALDIHYDE ^b	1981	333	3	I	-	3-204	81
ACETALDIHYDE ^c	1081	1089	3	I	-	3-100	200
acetone ACETALDIHYDE	see 3372	1684	3	II	-	3-206	206
ACETALDIHYDE/5% AMMONIA	9021	184	9	III	-	6-07	502
ACETALDIHYDE/5% DIFETHYL ACETAL ^d	see 3101	1088	3	II	-	3-608	430
-nitro -	see 2171	1086	3	II	-	3-106	333
acetaldehyde ACETALDIHYDE OXIME	3381 ^e	7333	3	I	-	3-100	200
ACETALDIHYDE	see 1955	9839	6.1	I	-	6-127	300
acetaldehyde ACETALDIHYDE	see 3301	1022	3	II	-	3-608	430
ACETIC ACID (GLA) GLA	8100	2769	8	I	Harmful (acute)	8-04	750
ACETIC ACID, SOL. LIQUID, more than 50% acid, by mass	8100	2769	8	I	Harmful (acute)	8-04	750
ACETIC ACID, SOL. LIQUID, more than 10% acid, but not more than 40% acid, by mass	8100	2769	8	I	-	8-06	750
ACETIC ALDEHYDE ^f	see 3101 ^g	1089	3	I	-	3-206	206
ACETIC ANHYDRIDE ^h	8101	1715	8	II	Harmful	8-04	750

16

International Air Transport Association (IATA) - Dangerous Goods Regulations (DGR)

- Regulates dangerous goods shipments via commercial air



17

IATA -- DGR (Cont)



Identification

4.2 List of Dangerous Goods

UN ID No.	Proper Shipping Name/Description	Class Div	Sub Risk	Hazard Label(s)	PG	Passenger and Cargo Aircraft				Cargo Aircraft Only				S.P. see 4.4
						LTD Qty		PG		Max Qty per Pkg		Max Qty per Pkg		
						F	I	F	I	Max Qty per Pkg	Max Qty per Pkg	Max Qty per Pkg	Max Qty per Pkg	
A	B			E	F	G	H	I	J	K	L	M	N	
	Acetylene, see p-Nitrosodimethylaniline (UN 1359) Accumulators, electric, see Batteries , etc. † (UN 2794, UN 2796, UN 2809) Accumulators, pressurized, hydraulic (containing non-flammable gas), see Articles, pressurized, hydraulic , etc. (UN 3164) Accumulators, pressurized, pneumatic (containing non-flammable gas), see Articles, pressurized, pneumatic , etc. (UN 3164)													
1388	Acetal	3		Flamm. liquid	II	Y305	1 L	305	5 L	307	60 L			

18

4
A

TM 38-250 / AFJMAN 24-204



- This is a joint service publication



19

- Regulates dangerous goods shipments via military air

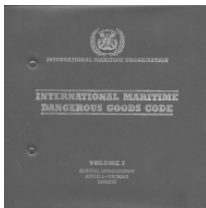
TM 38-250 (Cont)

SYMBOL (1)	PROPER SHIPPING NAME/DESCRIPTION (2)	HAZARD CLASS/IV (3)	UNIT NUMBER (4)	PG (5)	SUBSIDIARY RISK (6)	SPECIAL PROVISION (7)	PACKAGING PARAGRAPH (8)
<i>Acetallene; see P</i>							
<i>NETROSODIUM METHANOLINE</i>							
D	<i>Accumulators, electric; see BATTERIES, WET, etc.</i>	2.2	NA1956			P5	A6.9
	<i>ACCUMULATORS, PRESSURIZED, PNEUMATIC or HYDRAULIC (containing nonflammable gas) see also, ARTICLES, PRESSURIZED, etc.</i>						
	ACETAL	3	UN1088	II		P5	A7.3
	ACETALDEHYDE	3	UN1089	I		P3, A3	A7.3
	ACETALDEHYDE AMMONIA	9	UN1841	III		P5	A13.13
	ACETALDEHYDE OXIME	3	UN2332	III		P5	A7.3
	ACETIC ACID, GLACIAL or ACETIC ACID SOLUTION, with more than 80% acid, by mass	8	UN2789	II		P5, A3, A6, A7, A10	A12.3
	ACETIC ACID SOLUTION, with more than 10%, but not more than 80% acid, by mass	8	UN2790	II		P5, A3, A6, A7, A10	A12.3
	ACETIC ANHYDRIDE	8	UN1715	II	3	P5, A3, A6, A7, A10	A12.3
<i>Acetic anhydride; see ACETIC ANHYDRIDE</i>							
<i>Acetoin; see ACETYL METHYL CARBINOL</i>							
	ACETONE	3	UN1090	II		P5	A7.3
	ACETONE	6.1	UN1541	I		P2, 2, A3, N34	A10.7

20

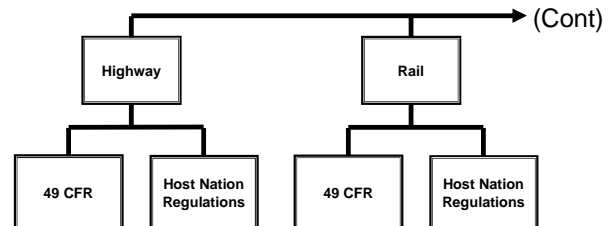
Multiple Regulations

- Each of these covers a different Transportation Mode. Be sure to use all that apply.



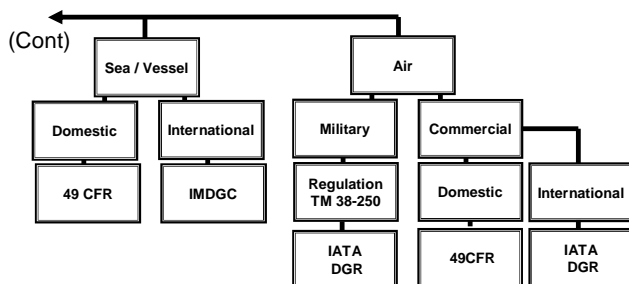
21

HAZMAT Regulations by Mode



22

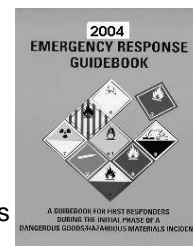
HAZMAT Regulations by Mode (Cont)



23

Current Emergency Response Guidebook (ERG)

- A guidebook for first responders during the initial phase of a hazardous materials / dangerous goods incident



24

ERG -- Yellow

- **Yellow** section: Index list of dangerous goods in numerical ID number order

ID No.	Guide No.	Name of Material
1090	127	Acetone

25

ERG -- Blue

- **Blue** section: Index list of dangerous goods in alphabetical order of substance name

Name of Material	Guide No.	ID No.
Sulfuric acid	137	1830

26

ERG -- Orange

- **Orange** section: Safety recommendations & emergency response information for dangerous substances identified by guide number including:
 - Potential Hazards: lists any fire, explosion & health effects of substances that must be handled immediately

27

ERG -- Orange (Cont)

- **Orange** section (Cont):
 - **Public Safety:** tells response team the immediate isolation distances, protective clothing recommendations & suggested evacuation distances
 - **Emergency Response:** Provides guidance & activities for fire, spill or leak incidents & first aid procedures

28

ERG -- Green

- **Green** section: Index list by numerical ID number of only those substances which are poisonous by inhalation
 - Includes initial isolation & protective action distances
- Remember: This publication **should not** be used to determine proper compliance

29

Unit HAZMAT Responsibilities

30

Unit Responsibilities

- Purpose is to provide guidance and send “Flags” to UMO’s that certain equipment & materials may be defined as hazardous material.
- Some Items that are commonly shipped by deploying units: Oxygen & Acetylene cylinders; other compressed gases; various batteries & battery acids; mogas, diesel fuel & other POL products; antifreeze; fire extinguishers; mineral spirits, paint & paint thinner.

31

Unit Responsibilities (Cont)

- Appendix D, FM 4-01.011 gives direction on tasks that need to be accomplished to comply with HAZMAT regulations
- ☆ Determine Proper Shipping Name
- ⌚ Determine the Hazard Class(s)
- ⌚ Determine the mode(s) of transportation
- ⌚ Make sure proper labeling is applied

32

Unit Responsibilities (Cont)

- ⌚ Make sure you select proper packaging
- ⌚ Ensure packaging is properly marked
- ⌚ Prepare packing/load lists as required
- ⌚ Determine the proper placarding of vehicles
- ⌚ Determine the segregation requirements
- ⌚ Ensure water commodity/special handling codes are entered into AUEL
- &(Step 11) Prepare appropriate shipping documentation

33

Hazardous Material Documentation

34

SDDG

Shipper's Declaration of Dangerous Goods

35

Shipper's Dangerous Goods Checklist

SHIPPER'S DANGEROUS GOODS CHECKLIST FOR NON-RADIOACTIVE BIOLOGICAL SHIPMENTS.

SHIPPER'S DECLARATION FOR DANGEROUS GOODS (DGD).

IS THE FOLLOWING INFORMATION AS PRESENTED ON A SHIPPER'S DECLARATION OF DANGEROUS GOODS FORM AND/OR WAYBILL CORRECT AND COMPLETE?

CHECK ALL APPROPRIATE BOXES.

- Two copies in English and in the IATA format.
- Full name and address of Shipper
- Full name and address of Consignee.

YES

•

•

•

Quantity and Type of Packing.

- Number and type of Packages.
- Quantity and unit of measure per package.
- Packing instruction number.

YES N/A

•

•

•

36

<ul style="list-style-type: none"> Pages numbered and totaled. Name of City Airports of departure and destination (may be entered by courier). Delete the word "Radioactive and either 'Passenger and Cargo' or 'Cargo Aircraft only'". Proper shipping Name. (Class 6.2 proper shipping name is INFECTIOUS SUBSTANCE AFFECTING HUMANS). (technical name, Physical state and Risk group may be required). Class or division. UN or ID number preceded by prefix. Packing Group. Subsidiary Risk. E.G. Dry Ice 	<ul style="list-style-type: none"> Prior arrangement statement for Infectious Substances. Name and Title of signatory, Place and Date indicated. Signature of Shipper. Amendment or alteration signed by Shipper. On the Air Waybill. The Handling Information box shows: <ul style="list-style-type: none"> "Dangerous goods as per attached Shippers Declaration". Cargo Aircraft Only, if applicable. Packing conforms with packing instructions and is undamaged.
---	---

37

DD Form 626

Motor Vehicle Inspection (Transporting Hazardous Materials)

38

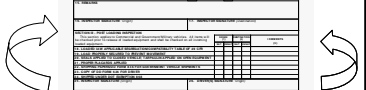
DD Form 626

- Motor Vehicle Inspection (Transporting Hazardous Materials) form
- Shipper must inspect** vehicle at origin before loading. **Receiver inspects** vehicle at destination before unloading
- Used for Inspecting government and commercial vehicles (see instructions for commercial vehicle)

39

DD Form 626 (Cont)

- Read instructions before completing this form. Instructions are found on the reverse side of the form.



40

DD Form 836

Dangerous Goods Shipping Paper / Declaration and Emergency Response Information for Hazardous Materials Transported by Government Vehicles, Containers or Vessels

41

DD Form 836

- Fill out a DD Form 836 if **transporting HAZMAT on government vehicles or in any shipping container** (including commercial 20' or 40' shipping containers) that is placed on a government vehicle for transportation
- Ensure other forms (HAZMAT guides from the current Emergency Response Guidebook [ERG]) are attached as appropriate

42

DD Form 836 (Cont)

- Must list all HAZMAT, providing quantities & weight
- Only a person who has completed the Hazardous Material Course can certify this document.

43

DD Form 836 (Cont)

- The emergency information for explosives is found on the reverse side of the form
- When carrying HAZMAT other than explosives, attach the appropriate guide from the current ERG

44

DD Form 836 (Cont)

- Appropriate Emergency Response Guidebook page(s) must be attached to DD Form 836

45

DD Form 2890

DOD MULTIMODAL DANGEROUS GOODS DECLARATION

- Used by unit to certify hazardous material moving by commercial truck, rail and sea
- Can be used instead of DD form 836 on public highways in CONUS
- Must be used by sea mode, SDDC will no longer accept the DD Form 836

46 REF Forscom Reg 55-1 PG 114 & 115

DD Form 2890 Cont

- When certifying by multiple modes units need only complete the DD Form 2890, certifying to the most stringent mode
- Individual certifying the form must be trained by a DOD approved school
- When the form is being used to certify hazardous materials moving by military vehicles in CONUS, the certifier can be either school trained or have been qualified as a Technical Specialist within The past 24 months

47 Ref Forscom Reg 55-1 Pg. 114 & 115

DD FORM 2890C (CONTINUATION SHEET)

- The DD Form 2890C is used as a continuation form and must be attached to the DD Form 2890

DD FORM 2890C

48 Ref Forscom Reg 55-1 Pg. 114 & 116

49

-
- A stylized illustration of a hand holding a document. The document features a large barcode. The background is a dark, textured gray.

5

51

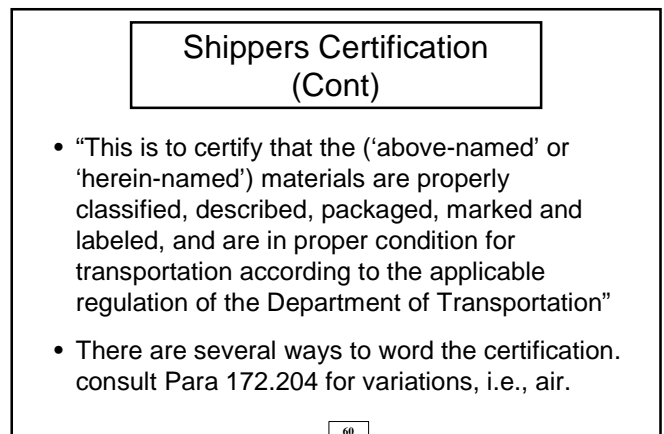
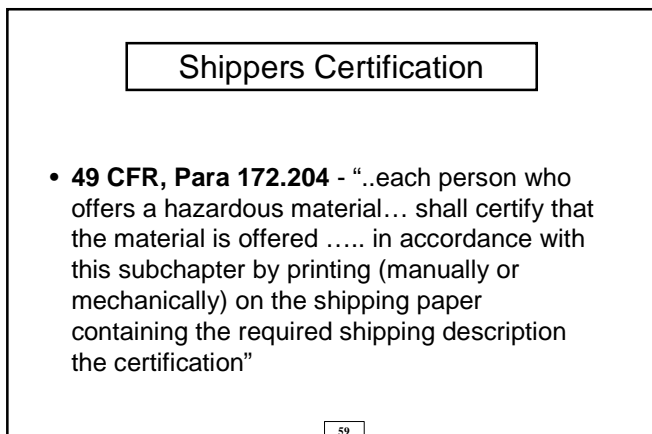
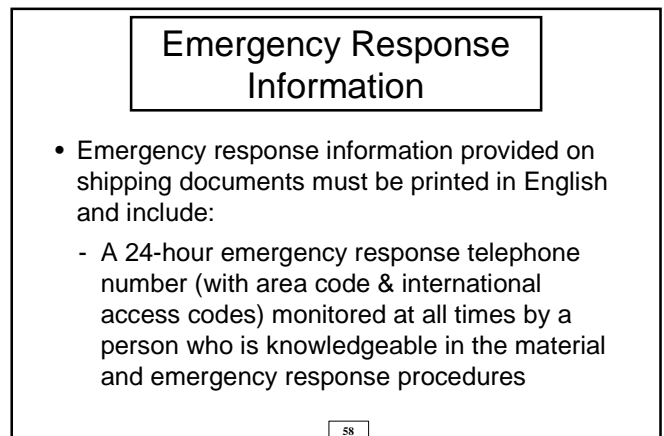
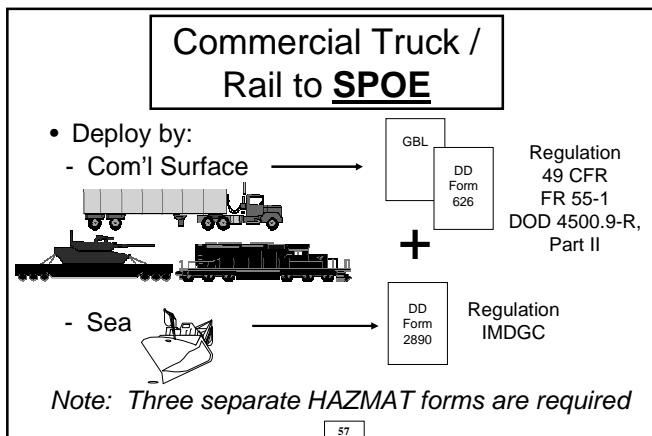
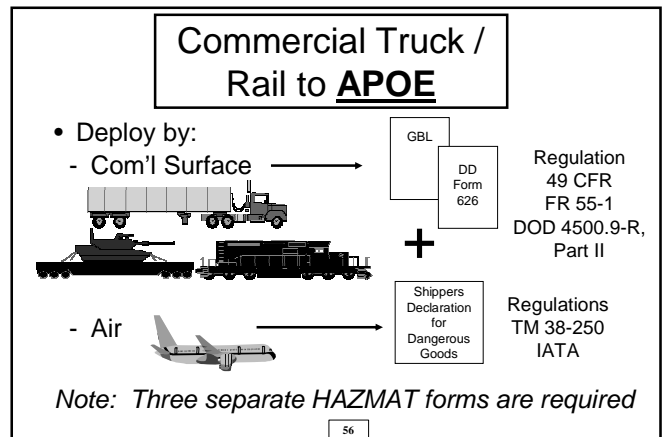
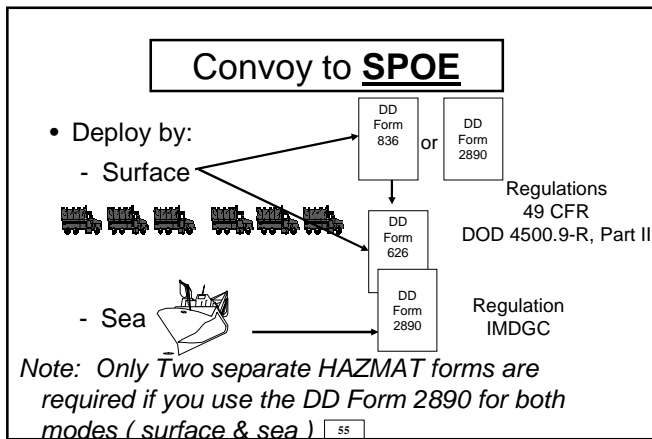
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5

53

- Air

Note: Three separate HAZMAT forms are required
If DD Form 2890 is used, you still need three forms



Training Requirements

- Mandatory for all involved with preparation, shipment or certification of HAZMAT for transportation
- Training documented in personnel records until 90 days following separation from DOD
- HAZMAT training is **good for 2 years**, then refresher courses are required
- Certifier and packaging personnel are appointed in writing by unit commander

61

Certification Training Requirements

- Certification training must be accomplished at one of four DOD schools located at:
 - U.S. Army Defense Ammunition Center, Savanna, IL
 - School of Military Packaging Technology, Aberdeen Proving Grounds, MD
 - Navy Supply Corps School, Athens, GA
 - 345 TRS / TTTD, Lackland AFB, TX

62

Hazardous Materials Information

63

Classifying HAZMAT

- Three steps to proper HAZMAT Classification:
 - ☆ Correctly identify & classify material into one of the nine Hazard Classes
 - ⌚ Determine any subsidiary risks
 - ⌚ Assign the item to one of the 3 Packing Groups, if applicable
- Note: A single material may fall into several hazard classes

64

Identifying HAZMAT

- HAZMAT must be identified by its **Proper Shipping Name** as listed in the appropriate modal regulation
 - Trade Names (for example, "Drop Dead Fly Trap") are **NOT** considered proper shipping names
 - Pesticides, solid, toxic, n.o.s. would be the Proper Shipping Name for the above product

65

Identifying HAZMAT (Cont)

- HAZMAT must also be identified by the **Chemical Name** of the **primary** hazardous ingredient & proper ID number
 - Example: Dithiocarbamate pesticide, solid, poisonous UN2771
- Packing Group (if applicable) must also be identified

66

Identifying HAZMAT (Cont)

- Packing Groups (PG): indicate degree of danger presented by the material
 - PG I: Great Danger
 - PG II: Medium Danger
 - PG III: Minor Danger

67

Identifying HAZMAT (Cont)

- Packing Group classification example:
 - Hydrogen Peroxide:
 - Pure -100%: = PG I
 - 7-10% Diluted: = PG II
 - 50 -70% Diluted: = PG III



68

Identifying HAZMAT (Cont)

- ID numbers are not required for:
 - Limited Quantity
 - Consumer Commodity ORM-D



69

Hazardous Material Class Labels



70

HAZMAT Packaging & Marking/Labeling

- Use UN or other authorized packaging
- Packaging materials must be compatible with the hazardous material being packaged
- Multiple substances in one package must be compatible with each other
- In addition to shipper/consignee information, HAZMAT shipments require additional marking/labeling

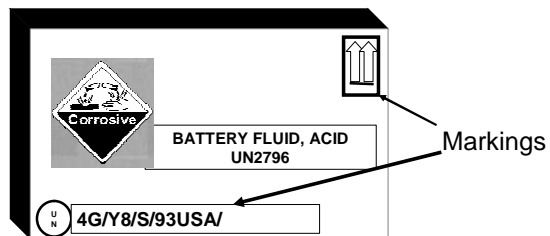
71

HAZMAT Marking/Labeling (Cont)

- Markings must be:
 - Durable
 - In English
 - Un-obscured
 - Sharp contrasting background
 - Away from other markings

72

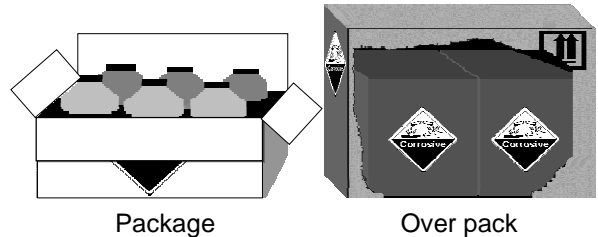
HAZMAT Marking/Labeling



73

Liquid Hazardous Material

- Closures in upright position

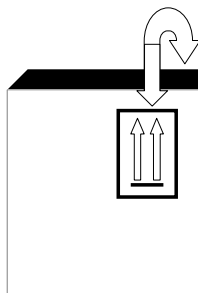


Package

Over pack

74

Package Orientation Arrows



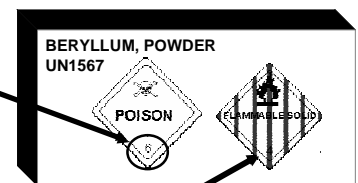
- Orientation arrows must be on two opposite vertical sides oriented in correct upright position

75

Subsidiary HAZMAT Labeling

- Primary hazard class label with hazard class number

A hazardous material with multiple hazards must have the labels no more than 150mm or 6 inches apart

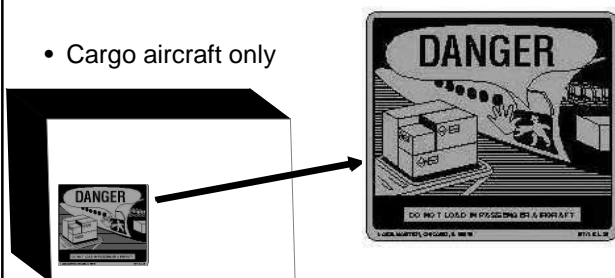


- Subsidiary hazard class label with hazard class number

76

Special Labels

- Cargo aircraft only



77

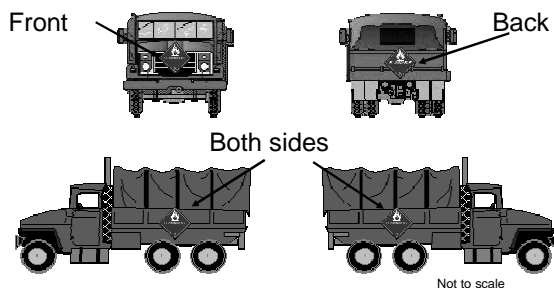
Durability of Labels & Placards

- All labels and placards must be capable of withstanding, without deterioration or a substantial reduction in effectiveness, a 30-day exposure to open weather conditions.



78

General Placarding Requirements



79

Hazardous Material Compatibility

- Packages containing HAZMAT which might react with one another may not be stowed next to each other
- Know the Hazard Identity



80

Hazardous Material Compatibility (Cont)

- HAZMAT segregated by Hazard Classification
 - Flammable / Combustible
 - Corrosives (acids / bases)
 - Oxidizers
 - Compressed Gases
- Use DLA Inst 4145.11 as a guide



81

Hazardous Material Compatibility (Cont)

- Incompatible = "unwanted reaction"
- Incompatible mixtures may produce:
 - Heat
 - Fire
 - Explosion
 - Toxic gases/vapors




82

USING THE IDENTIFICATION NUMBER TO FIND THE PROPER SHIPPING NAME FOR A HAZARDOUS MATERIAL

STEP 1: Select the appropriate ID Number from the ‘Identification Number Cross Reference Index to Proper Shipping Names’ (may be found in either CFR 49 Parts 100 to 185 or the Emergency Response Guide). For the example we have selected ‘UN0009’. (Note that in this table items are listed numerically by ‘Identification Number’). Go to the ‘Description’ column and write down the ‘Proper Shipping Name’ – in this it is ‘Ammunition, incendiary’.

STEP 2: Go to 172.101 ‘Hazardous Materials Table’ in CFR 49 (items listed alphabetically by Shipping Name) and scroll through the items in this table until you find the appropriate ‘Proper Shipping Name’ in Column 2. As several ‘Proper Shipping Names’ may be similar, confirm that you have the correct item by checking the ‘Identification Number’ in Column 4 (it should be the same ‘Identification Number’ with which you commenced your search).


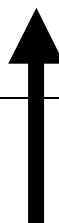
Identification Number Cross Reference Index to Proper Shipping Names



Number	Description
UN0004	Ammunition picrate, dry or wetted with less than 10 percent water, by mass
UN0005	Cartridges for weapons, with bursting charge
UN0006	Cartridges for weapons, with bursting charge
UN0007	Cartridges for weapons, with bursting charge
UN0009	Ammunition, incendiary with or without burster, expelling charge, or propelling charge.
UN0010	Ammunition, incendiary with or without burster, expelling charge, or propelling charge.
UN0012	Cartridges for weapons, inert projectile or Cartridges, small arms.
UN0014	Cartridges for weapons, blank or Cartridges, small arms, blank.

S172.101 HAZARDOUS MATERIALS TABLE - Continued

Sym-bols	Hazardous materials descriptions and proper shipping names	Hazard class of division	Identif-ication Num-bers	PG	Label Codes	Special provi-sions	(8) Packaging (S173.***)			(9) Quantity limitations		(10) Vessel stow-age	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo air-craft only	Loca-tion	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Ammunition, incendiary, white phosphorus, with burster, expelling charge or propelling charge.....	1.3H	UN0244	II	1.3H,		*****	62....	None.	Forbidden	Forbidden	08	8E 14E 15E
	Ammunition, incendiary with or without burster, expelling charge, or propelling charge	1.2G	UN0009	II	1.2G.		*****	62....	None.	Forbidden	Forbidden	03	

SHIPPER'S DECLARATION FOR DANGEROUS GOODS

(Provide at least two copies to the airline.)

SHIPPER'S DECLARATION FOR DANGEROUS GOODS							
Shipper 1				Air Waybill No. 3 Page of Pages Shipper's Reference Number (optional)			
Consignee 2							
<i>Two completed and signed copies of this Declaration must be handed to the operator.</i>				WARNING Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties. This Declaration must not, in any circumstances, be completed and/or signed by a consolidator, a forwarder or an IATA cargo agent.			
TRANSPORT DETAILS 4 This shipment is within the limitations prescribed for: (delete non-applicable) <div> <div>PASSENGER AND CARGO AIRCRAFT</div> <div>CARGO AIRCRAFT ONLY</div> </div>				Airport of Departure: 			
Airport of Destination: 				Shipment type: (delete non-applicable) 5 <div> <div>NON-RADIOACTIVE</div> <div>RADIOACTIVE</div> </div>			
NATURE AND QUANTITY OF DANGEROUS GOODS							
Dangerous Goods Identification					Quantity and type of packing	Packing Inst.	Authorization
Proper Shipping Name	Class or Division	Id. or ID No.	Packing Group	Subsidiary Risk			
6	7	8	9		10	11	
Additional Handling Information 12 13							
I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.					Name/Title of Signatory Place and Date Signature (see warning above)		
					14		

MOTOR VEHICLE INSPECTION (TRANSPORTING HAZARDOUS MATERIALS)											
<i>(Read Instructions before completing this form.)</i>											
This form applies to all vehicles which must be marked or placarded in accordance with Title 49 CFR.				1. GOVERNMENT BILL OF LADING/TRANSPORTATION CONTROL NUMBER							
SECTION 1 - DOCUMENTATION				ORIGIN a.				DESTINATION b.			
2. CARRIER/GOVERNMENT ORGANIZATION											
3. DATE/TIME OF INSPECTION											
4. LOCATION OF INSPECTION											
5. OPERATOR(S) NAME(S)											
6. OPERATOR(S) LICENSE NUMBER(S)											
7. MEDICAL EXAMINER'S CERTIFICATE*											
8. (X if satisfactory at origin)								9. CVSA DECAL DISPLAYED ON COMMERCIAL EQUIPMENT			
a. MILITARY HAZMAT ENDORSEMENT				d. ERG OR EQUIVALENT COMMERCIAL:		YES		NO			
b. VALID LEASE*				e. DRIVER'S VEHICLE INSPECTION REPORT*				a. TRUCK/TRACTOR		YES NO	
c. ROUTE PLAN				f. COPY OF 49 CFR PART 397				b. TRAILER		YES NO	
SECTION 11 - MECHANICAL INSPECTION											
<i>All items shall be checked on empty equipment prior to loading. Items with an asterisk shall be checked on all incoming loaded equipment.</i>											
10. TYPE OF VEHICLE(S)						11. VEHICLE NUMBER(S)					
12. PART INSPECTED (X as applicable)		ORIGIN (1)		DESTINATION (2)		COMMENTS (3)		ORIGIN (1)		DESTINATION (2)	
		SAT	UNSAT	SAT	UNSAT			SAT	UNSAT	SAT	UNSAT
a. SPARE ELECTRICAL FUSES						k. EXHAUST SYSTEM					
b. HORN OPERATIVE						l. BRAKE SYSTEM*					
c. STEERING SYSTEM						m. SUSPENSION					
d. WINDSHIELD/WIPERS						n. COUPLING DEVICES					
e. MIRRORS						o. CARGO SPACE					
f. WARNING EQUIPMENT						p. LANDING GEAR*					
g. FIRE EXTINGUISHER*						q. TIRES, WHEELS, RIMS					
h. ELECTRICAL WIRING						r. TAILGATE/DOORS*					
i. LIGHTS AND REFLECTORS						s. TARPULIN*					
j. FUEL SYSTEM*						t. OTHER (Specify)					
13. INSPECTION RESULTS (X one) ACCEPTED						REJECTED					
<i>(If rejected give reason under "Remarks". Equipment will be approved if deficiencies are corrected prior to loading.)</i>											
14. SATELLITE MOTOR SURVEILLANCE SYSTEM: (X one) ACCEPTED						REJECTED					
15. REMARKS											
16. INSPECTOR SIGNATURE (Origin)						17. INSPECTOR SIGNATURE (Destination)					
SECTION III - POST LOADING INSPECTION											
This section applies to Commercial and Government/Military vehicles. All items will be checked prior to release of loaded equipment and shall be checked on all incoming loaded equipment.								ORIGIN (1)		DESTINATION (2)	
								SAT		UNSAT	
18. LOADED IAW APPLICABLE SEGREGATION/COMPATIBILITY TABLE OF 49 CFR											
19. LOAD PROPERLY SECURED TO PREVENT MOVEMENT											
20. SEALS APPLIED TO CLOSED VEHICLE; TARPULIN APPLIED ON OPEN EQUIPMENT											
21. PROPER PLACARDS APPLIED											
22. SHIPPING PAPERS/DD FORM 836 FOR GOVERNMENT VEHICLE SHIPMENTS											
23. COPY OF DID FORM 626 FOR DRIVER											
24. SHIPPED UNDER DOT EXEMPTION 868											
25. INSPECTOR SIGNATURE (Origin)						26. DRIVER(S) SIGNATURE (Origin)					
27. INSPECTOR SIGNATURE (Destination)						28. DRIVER(S) SIGNATURE (Destination)					

INSTRUCTIONS**SECTION I - DOCUMENTATION****General Instructions.**

All items (2 through 9) will be checked at origin prior to loading. Items with an asterisk (*) apply to commercial operators or equipment only. Only Items 2 through 7 are required to be checked at destination.

Items 1 through 5. Self explanatory.

Item 6. Enter operator's Commercial Driver's License (CDL) number or Military OF-346 License Number. CDL and OF-346 must have the HAZMAT and other appropriate endorsements IAW Part 383.

Item 7. *Enter the expiration date listed on the Medical Examiner's Certificate.

Item 8.a. APPLIES TO MILITARY OPERATORS ONLY. Military Hazardous Materials Certification. In accordance with applicable service regulations, ensure operator has been certified to transport hazardous materials.

b. *Valid Lease. Shipper will ensure a copy of the appropriate contract of lease is carried in all leased vehicles and is available for inspection. (Defense Transportation Regulation (DTR) requirement.)

c. Route Plan. Prior to loading any Hazard Class/Division 1, 1.1, 1.2, or 1.3 (Explosives) for shipment, ensure that the operator possesses a written route plan in accordance with 49 CFR Part 397. Route Plan requirements for Hazard Class 7 (Radioactive) materials are found in 49 CFR 397.101.

d. Emergency Response Guidebook (ERG) or Equivalent. Commercial operators must be in possession of an ERG or equivalent document. Shipper will provide applicable ERG page(s) to military operators.

e. *Driver's Vehicle Inspection Report. Review the operator's Vehicle Inspection Report. Ensure that there are no defects listed on the report that would affect the safe operation of the vehicle.

f. Copy of 49 CFR Part 397. Operators are required by regulation to have in their possession a copy of 49 CFR Part 397 (Hazardous Materials Driving and Parking Rules). If military operators do not possess this document, shipper may provide a copy to operator.

Item 9. *Commercial Vehicle Safety Alliance (CVSA) Decal. Check to see if equipment has a current CVSA decal and mark applicable box. Vehicles without CVSA, check documentation of the last vehicle periodic inspection.

SECTION 11 - MECHANICAL INSPECTION**General Instructions.**

All items (12.a. through 12.t.) will be checked on all incoming empty equipment prior to loading. All UNSATISFACTORY conditions must be corrected prior to loading. Items with an asterisk (*) shall be checked on all incoming loaded equipment. Unsatisfactory conditions that would affect the safe off-loading of the equipment must be corrected prior to unloading.

SECTION 11 (Continued)

Item 12.a. Spare Electrical Fuses. Check to ensure that at least one spare fuse for each type of installed fuse is carried on the vehicle as a spare or vehicle is equipped with an overload protection device (circuit breaker). (49 CFR 393.95)

b. Horn Operative. Ensure that horn is securely mounted and of sufficient volume to serve purpose. (49 CFR 393.81)

c. Steering System. The steering wheel shall be secure and must not have any spokes cracked through or missing. The steering column must be securely fastened. Universal joints shall not be worn, faulty or repaired by welding. The steering gear box shall not have loose or missing mounting bolts or cracks in the gear box mounting brackets. The pitman arm on the steering gear output shaft shall not be loose. Steering wheel shall turn freely through the limit of travel in both directions. All components of a power steering system must be in operating condition. No parts shall be loose or broken. Belts shall not be frayed, cracked or slipping. The power steering system shall not be leaking. (49 CFR 396 Appendix G)

d. Windshield/Wipers. Inspect to ensure that windshield is free from breaks, cracks or defects that would make operation of the vehicle unsafe; that the view of the driver is not obscured and that the windshield wipers are operational and wiper blades are in serviceable condition. Defroster must be operative when conditions require. (49 CFR 393.60, 393.78 and 393.79)

e. Mirrors. Every vehicle must be equipped with two rear vision mirrors located so as to reflect to the driver a view of the highway to the rear along both sides of the vehicle. Mirrors shall not be cracked or dirty. (49 CFR 393.80)

f. Warning Equipment. Equipment must include three bidirectional emergency reflective triangles that conform to the requirements of FMVSS No. 125. FLAME PRODUCING DEVICES ARE PROHIBITED. (49 CFR 393.95)

g. Fire Extinguisher. Military vehicles must be equipped with two serviceable fire extinguishers with an Underwriters Laboratories rating of 10 BC or more. (Commercial motor vehicles must be equipped with one serviceable 10 BC Fire Extinguisher). Fire extinguisher(s) must be located so that it is readily accessible for use and securely mounted on the vehicle. The fire extinguisher must be designed, constructed and maintained to permit visual determination of whether it is fully charged. (49 CFR 393.95)

h. Electrical Wiring: Electrical wiring must be clean and properly secured. Insulation must not be frayed, cracked or otherwise in poor condition. There shall be no uninsulated wires, improper splices or connections. Wires and electrical fixtures inside the cargo area must be protected from the lading. (49 CFR 393.28, 393.32, 393.33)

INSTRUCTIONS

SECTION 11 (Continued)

i. Lights/Reflectors. (Head, tail, turn signal, brake, clearance, marker and identification lights, Emergency Flashers). Inspect to see that all lighting devices and reflectors required are operable, of proper color and properly mounted. Ensure that lights and reflectors are not obscured by dirt or grease or have broken lenses. High/Low beam switch must be operative. Emergency Flashers must be operative on both the front and rear of vehicle. (49 CFR 393)

j. Fuel System. Inspect fuel tank and lines to ensure that they are in serviceable condition, free from leaks, or evidence of leakage and securely mounted. Ensure that fuel tank filler cap is not missing. Examine cap for defective gasket or plugged vent. Inspect filler necks to see that they are in completely serviceable condition and not leaking at joints. (49 CFR 393.83 and 396 Appendix G)

k. Exhaust System. Exhaust system shall discharge to the atmosphere at a location to the rear of the cab or if the exhaust projects above the cab, at a location near the rear of the cab. Exhaust system shall not be leaking at a point forward of or directly below the driver compartment. No part of the exhaust system shall be located where it will burn, char or damage electrical wiring, fuel system or any other part of the vehicle. No part of the exhaust system shall be temporarily repaired with wrap or patches. (49 CFR 393.83 and 396 Appendix G)

1. Brake System (to include hand brakes, parking brakes and Low Air Warning devices). Check to ensure that brakes are operational and properly adjusted. Check for audible air leaks around air brake components and air lines. Check for fluid leaks, cracked or damaged lines in hydraulic brake systems. Ensure that parking brake is operational and properly adjusted. Low Air Warning devices must be operative. (49 CFR 396 Appendix G)

m. Suspension. Inspect for indications of misaligned, shifted or cracked springs, loosened shackles, missing bolts, spring hangers unsecured at frame and cracked or loose U-bolts. Inspect for any unsecured axle positioning parts, and sign of axle misalignment, broken torsion bar springs (if so equipped). (49 CFR 396 Appendix G)

n. Coupling Devices (Inspect without uncoupling). Fifth Wheels: Inspect for unsecured mounting to frame or any missing or damaged parts. Inspect for any visible space between upper and lower fifth wheel plates. Ensure that the locking jaws are around the shank and not the head of the kingpin. Ensure that the release lever is seated properly and safety latch is engaged. Pintle Hook, Drawbar, Towbar Eye and Tongue and Safety Devices: Inspect for unsecured mounting, cracks, missing or ineffective fasteners (welded repairs to pintle hook is prohibited). Ensure safety devices (chains, hooks, cables) are in serviceable condition and properly attached. (49 CFT 396 Appendix G)

o. Cargo Space. Inspect to ensure that cargo space is clean and free from exposed bolts, nuts, screws, nails or inwardly projecting parts that could damage the lading. Check floor to ensure it is tight and free from holes. Floor shall not be permeated with oil or other substances. (49 CFR 177.815(e)(1) and 398.94)

p. Landing Gear. Inspect to ensure that landing gear and assembly are in serviceable condition, correctly assembled, adequately lubricated and properly mounted.

SECTION 11 (Continued)

q. Tires, Wheels and Rims: Inspect to ensure that tires are properly inflated. Flat or leaking tires are unacceptable. Inspect tires for cuts, bruises, breaks and blisters. Tires with cuts that extend into the cord body are unacceptable. Thread depth shall not be less than: 4/32 inches for tires on a steering axle of a power unit, and 2/32 inches for all other tires. Mixing bias and radial on the steering axle is prohibited. Inspect wheels and rims for cracks, unseated locking rings, broken, loose, damaged or missing lug nuts or elongated stud holes. (49 CFR 396 Appendix G)

r. Tailgate/Doors. Inspect to see that all hinges are tight in body. Check for broken latches and safety chains. Doors must close securely. (49 CFR 177.835(h))

s. Tarpaulin. If shipment is made on open equipment, ensure that lading is properly covered with fire and water resistant tarpaulin. (49 CFR 177.835(h))

t. Other Unsatisfactory Condition. Note any other condition which would prohibit the vehicle from being loaded with hazardous materials.

Item 14. For AA&E and other shipments requiring satellite surveillance, ensure that the Satellite Motor Surveillance System is operable. Shipper will instruct the driver to send a "test" emergency message to DTTS by having the driver activate the "emergency (panic) button". Shipper will contact DTTS at 1-800-826-0794 to verify that test message was received. Message must be received by DTTS for system to be considered operational.

SECTION III - POST LOADING INSPECTION

General Instructions.

All items will be checked prior to the release of loaded equipment. Shipment will not be released until deficiencies are corrected. All items will be checked on incoming loaded equipment. Deficiencies will be reported in accordance with applicable service regulations.

Item 18. Check to ensure shipment is loaded in accordance with 49 CFR Part 177.848 and the applicable Segregation or Compatibility Table of 49 CFR 177.848.

Item 19. Check to ensure the load is secured from movement in accordance with applicable service outload drawings.

Item 20. Check to ensure seal(s) have been applied to closed equipment; fire and water resistant tarpaulin applied on open equipment.

Item 21. Check to ensure each transport vehicle has been properly placarded in accordance with 49 CFR Part 172 Subpart F.

Item 22. Check to ensure operator has been provided shipping papers that comply with 49 CFR Part 172 Subpart C. For shipments transported by Government vehicle, shipping paper will be DD Form 836.

Item 23. Ensure operator(s) sign DD Form 626, are given a copy and understand the hazards associated with the shipment.

Item 24. Applies to Commercial Shipments Only. If shipment is made under DOT Exemption 868, ensure that shipping papers are properly annotated and copy of Exemption 868 is with shipping papers.

**INSTRUCTIONS FOR COMPLETING DD FORM 836,
DANGEROUS GOODS SHIPPING PAPER/DECLARATION AND EMERGENCY RESPONSE INFORMATION
FOR HAZARDOUS MATERIALS TRANSPORTED BY GOVERNMENT VEHICLES/CONTAINERS OR VESSEL**

GENERAL

DD Form 836 shall be completed by a **qualified*** individual from a transportation office, unit or other organization offering hazardous material (HAZMAT) for transportation in areas accessible to the general public.

*An individual is considered qualified to complete and sign (certify) DD Form 836, only after having satisfactorily completed either a DoD authorized HAZMAT Course from one of the DoD-approved schools listed in the Defense Transportation Regulation (DTR) or technical specialist training in accordance with DTR, Part II, Chapter 204, Para (e). This person shall be appointed in writing by the activity or unit commander, to include scope of authority.

Item 1. Fill in the nomenclature, model number, TCN, and bumper number/serial number, of the vehicle/container. For containers carrying sensitive or classified items, the container security seal is required.

Item 2. Enter the shipper's address and telephone number of the HAZMAT origination. Telephone number is for **NOTIFICATION PURPOSES ONLY**. Emergency assistance shall be obtained from the appropriate **24 HOUR EMERGENCY ASSISTANCE TELEPHONE NUMBER(S)** in Item 11c. on the first page of this form.

Item 3. Enter the place/date the HAZMAT was certified (e.g., C, Company 66 Armor Motor Pool, Fort Myer, VA 1 Sep 2000).

Item 4. Enter the date the HAZMAT will move.

Item 5. Enter the page number and total number of pages of this form for the vehicle/container carrying the HAZMAT. Example: "Page 1 of 4 Pages". If there are no continuation sheets, annotate "Page 1 of 1".

Item 6a. Enter the proper shipping name of the HAZMAT and if applicable include the technical name. (Enter additional information as required by 49 CFR, 172.203 - Example: RQ, Inhalation Hazard or by the IMDG Code General Introduction 9.3 - Example: Flashpoint.)

Item 6b. Enter the Hazard class/division and, if applicable, the Compatibility Group.

Item 6c. Enter the identification numbers (e.g., NA, UN). The letters "UN" or "NA" must be noted. "NA" may not be used for OCONUS.

Item 6d. Enter the packing group (e.g. I, II, or III) of the HAZMAT.

Item 6e. Enter the total number of packages/items.

Item 6f. Enter the type of packaging (e.g., container, box, drum, pallet), the HAZMAT is packed in.

Item 6g. Enter the total net quantity for non-explosive material in metric measure. U.S. measure may be added in parentheses underneath the metric measure. For vessel shipments, add the total gross mass in metric measure.

Item 6h. Enter total Net Explosive Weight (NEW) in kilograms for ammunition/ explosive (Class 1 items). NEW information is found in the Joint Hazard Classification System (JHCS) in the entry for the NEW (Transportation Quantity). Example: 27.231 kg NEW.

Item 7. To be completed by Port Personnel. Enter the name of Port the HAZMAT is being discharged (e.g., Port of Damman, Saudi Arabia) for OCONUS only.

Item 8. To be completed by Port Personnel. Enter the name of the ship used (e.g., USS Watson) and Voyage number for OCONUS only.

Item 9. Enter the six digit Department of Defense Activity Address Codes (DODAAC) and/or the clear geographical location of the ultimate receiver or consignee of the HAZMAT shipment. If this is a unit move, the unit name will be the same as that for Item 2.) Additional information if needed can be annotated in Item 10 or the continuation of Item 10.

Item 10. Additional handling instructions/information.

Item 11. Self explanatory.

NOTE: For Radioactive Material Shipments only: Cross out the non-applicable numbers (e.g. Army shipments - cross out all but Army's radioactive response number.)

Item 12. To be completed by person responsible for packing the vehicle or container. Certifying person must type or print name legibly in 12a. and must sign in writing (longhand) in 12b.

Item 13. Certifying person must type or print name legibly in 13a. and must sign in writing (longhand) in 13b. 13c. - Self explanatory.

Item 14. For CONUS movements: (X) 49 CFR
For OCONUS movements: (X) 49 CFR and (X) IMDG

NOTES:

1. Units returning from firing range must have a certified or qualified person to ensure that all HAZMAT is properly repackaged and secured (i.e. braced, blocked, and tied down) prior to being transported back to base. **See exception below.**

2. Completion of a new DD Form 836 is not required. Original DD Form 836 may be used provided that:

a. Change Item 3. (Date Prepared) and Item 4. (Date of Travel) as needed.

b. Change Item 6. (Cargo):
(i) HAZMAT used shall be deleted from form by crossing out or lining through.

(ii) HAZMAT which remains, but is in different quantities shall have the correct amounts entered in the appropriate section(s).

EXCEPTION:

c. Change Item 13b.:

(i) A qualified individual (if available) shall sign in writing (longhand). If a qualified individual is not available, then the Officer-In-Charge (OIC) or Non-Commissioned Officer-In-Charge (NCOIC) shall sign in writing (longhand) to verify that the above procedures have been performed for the return trip to base.

(ii) Cross out original signature if different certifier will be used.

HAZMAT//HAZMAT//HAZMAT//HAZMAT//HAZMAT//HAZMAT

1.a. NOMENCLATURE:	c. CONTAINER SEAL NO.:	e. TCN NUMBER:
b. MODEL NO.:	d. SERIAL NO.:	f. BUMPER NO.:

DANGEROUS GOODS SHIPPING PAPER/DECLARATION AND EMERGENCY RESPONSE INFORMATION FOR HAZARDOUS MATERIALS TRANSPORTED BY GOVERNMENT VEHICLES/CONTAINERS OR VESSEL

2. SHIPPER/ADDRESS/TELEPHONE NO.	3. LOCATION AND DATE SHIPMENT PREPARED	4. DATE OF TRAVEL	5. PAGE 1 OF ____ PAGES
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6. CARGO (To be completed by the unit or shipper Transportation Office (T.O.))

PROPER SHIPPING NAME <small>(Include RQ, Technical Names, Additional Information per 49 CFR 172.203, as required.)</small> a.	HAZARD CLASS/DIVISION b.	UN/ID NUMBER c.	PACKING GROUP d.	PACKAGES		NET TOTAL QUANTITY & GROSS WT. (kg) g.	TOTAL AMMO (NEW) h.
				NUMBER e.	KIND f.		

(Port personnel complete Items 7 and 8.)

7. PORT OF EMBARKATION (OCONUS only)	8a. SHIP NAME (OCONUS only)	b. VOYAGE NUMBER
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9. CONSIGNEE

10. REMARKS

11a. COPY OF EMERGENCY GUIDE NUMBER(S) _____ ATTACHED (See back of this form.)

b. EMERGENCY NOTIFICATION. In all cases of accident, breakdown or fire, prompt notification must be given to shipper as noted in Item 2.

c. 24-HOUR EMERGENCY ASSISTANCE TELEPHONE NUMBERS:			
DOD NON-EXPLOSIVE HAZMAT: 1-800-851-8061 AT SEA: 804-279-3131 (COLLECT)	DOD HAZ CLASS 1 (EXPLOSIVES) ONLY: 703-697-0218/0219 (COLLECT) (WATCH OFFICER)	SAFE HAVEN: 1-800-524-0331 NATIONAL RESPONSE CENTER (NRC): 1-800-424-8802 AT SEA: 202-267-2675 (COLLECT)	DOD RADIOACTIVE MATERIALS: ARMY: (703) 697-0218 (COLLECT) USAF: (202) 767-4011 USN/MC: (757) 887-4692/ 1-888/528-0148 DLA: (717) 770-5283

12. CONTAINER PACKING CERTIFICATE OR VEHICLE PACKING DECLARATION
 It is hereby declared that the goods described above have been packed/loaded into the container/vehicle identified above in accordance with applicable provisions. *(Must be completed and signed for all container/vehicle loads by person responsible for packing/loading.)*

CONTAINER NO. _____	VEHICLE NO. _____
a. TYPE OR PRINT NAME	c. DATE (YYYYMMDD)

13. SHIPPER'S CERTIFICATION
 This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation, international and national governmental regulations.

a. TYPE OR PRINT NAME OF SHIPPER CERTIFIER _____

 SIGNATURE OF SHIPPER CERTIFIER

14. (X as appropriate) PREPARED IN ACCORDANCE WITH: _____ 49 CFR _____ IMDG _____

HAZMAT//HAZMAT//HAZMAT//HAZMAT//HAZMAT//HAZMAT

HAZMAT EMERGENCY RESPONSE INFO

EMERGENCY RESPONSE INFORMATION

Guide Numbers 112 and 114 from the U.S. Department of Transportation North American Emergency Response Guide Book (RSPA P 5800.7) are reproduced hereon. These guides are applicable to Hazard Class 1 Materials (Explosives).

Mark an X in the appropriate box:

☐

USE GUIDE 112 FOR EXPLOSIVES:
(1.1), (1.2), (1.3), (1.5) or (1.6) Class A or B

☐

USE GUIDE 114 FOR EXPLOSIVES:
(1.4) Class C

For all other hazardous materials or substances, annotate appropriate Emergency Response Guide Book Guide Number in the block below, and attach a copy of the guide number page or pages.

GUIDE 112

POTENTIAL HAZARDS

FIRE OR EXPLOSION:

MAY EXPLODE AND THROW FRAGMENTS 1600 METERS (1 MILE) OR MORE IF FIRE REACHES CARGO.

HEALTH HAZARDS:

- Fire may produce irritating, corrosive and/or toxic gases.

PUBLIC SAFETY:

CALL CHEMTREC AT 1-800-424-9300.

- Isolate spill or leak area immediately for at least 500 meters

(1/3 mile) in all directions. Move people out of line of sight of the scene and away from windows.

- Keep unauthorized personnel away and stay upwind.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING:

- Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

EVACUATION:

LARGE SPILL

- Consider initial evacuation for 800 meters (1/2 mile) in all directions.

FIRE

- If rail car or trailer is involved in a fire and heavily encased explosives such as bombs or artillery projectiles are suspected, ISOLATE for 1600 meters (1 mile) in all directions; also, initiate evacuation including emergency responders for 1600 meters (1 mile) in all directions.
- When heavily encased explosives are involved, evacuate the area for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE:

FIRE:

CARGO Fires: DO NOT FIGHT FIRE WHEN IT REACHES CARGO! CARGO MAY EXPLODE!

- Stop all traffic and clear the area for at least 1600 meters (1 mile) in all directions and let burn. Do not move cargo or vehicle if cargo has been exposed to heat.

TIRE or VEHICLE Fires:

- Use plenty of water - FLOOD it! If water is not available, use CO₂, dry chemical or dirt. If possible, and WITHOUT RISK, use unmanned hose holders or monitor nozzles from maximum distance to prevent fire from spreading to cargo area.
- Pay special attention to tire fires as re-ignition may occur. Stand by with extinguisher ready.

SPILL OR LEAK:

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded. Do not touch or walk through spilled material.
- DO NOT OPERATE RADIO TRANSMITTERS WITHIN 100 METERS (330 feet) OF ELECTRIC DETONATORS.
- DO NOT CLEAN UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.

FIRST AID:

- SEE GUIDE 114 FOR INSTRUCTIONS.

GUIDE 114

POTENTIAL HAZARDS

FIRE OR EXPLOSION:

MAY EXPLODE AND THROW FRAGMENTS 500 METERS (1/3 MILE) OR MORE IF FIRE REACHES CARGO.

HEALTH HAZARDS:

- Fire may produce irritating, corrosive and/or toxic gases.

PUBLIC SAFETY:

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer,

CALL CHEMTREC AT 1-800-424-9300.

- Isolate spill or leak area immediately for at least 100 meters (330 feet) in all directions. Move people out of line of sight of the scene and away from windows.
- Keep unauthorized personnel away and stay upwind.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING:

- Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

EVACUATION:

LARGE SPILL

- Consider initial evacuation for 250 meters (800 feet) in all directions.

FIRE

- If rail car or trailer is involved in a fire, ISOLATE for 500 meters (1/3 mile) in all directions; also, initiate evacuation including emergency responders for 500 meters (1/3 mile) in all directions.

CARGO Fires: DO NOT FIGHT FIRE WHEN IT REACHES CARGO! CARGO MAY EXPLODE!

- Stop all traffic and clear the area for at least 500 meters (1/3 mile) in all directions and let burn. Do not move cargo or vehicle if cargo has been exposed to heat.

TIRE or VEHICLE Fires:

- Use plenty of water - FLOOD it! If water is not available, use CO₂, dry chemical or dirt. If possible, and WITHOUT RISK, use unmanned hose holders or monitor nozzles from maximum distance to prevent fire from spreading to cargo area.
- Pay special attention to tire fires as re-ignition may occur. Stand by with extinguisher ready.

SPILL OR LEAK:

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded. Do not touch or walk through spilled material.
- DO NOT OPERATE RADIO TRANSMITTERS WITHIN 100 METERS (330 feet) OF ELECTRIC DETONATORS.
- DO NOT CLEAN UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.

FIRST AID:

- Move victim to fresh air. Call emergency medical care.
- Apply CPR if victim is not breathing.
- Administer oxygen if necessary.
- Remove and isolate contaminated clothing and shoes.
- Flush skin or eyes with running water for at least 20 minutes.
- Ensure that medical personnel are aware of the materials involved, and take precautions to protect themselves.

SUPPLEMENTAL INFORMATION:

Packages bearing the 1.4S label contain explosive substances or articles that are designed or packaged in such a manner that when involved in a fire, may burn vigorously with localized detonations and projection of fragments. Effects are usually confined to immediate vicinity of packages.

If fire threatens cargo area containing packages bearing the 1.4S label, consider initial isolation of at least 15 meters (50 feet) in all directions. Fight fire with normal precaution from a distance.

DOD MULTIMODAL DANGEROUS GOODS DECLARATION

This form may be used as a dangerous goods declaration as it meets the requirements of SOLAS 74, Chapter VII, regulation 54; MARPOL 79/78, Annex III, Regulation 4.

1. SHIPPER/CONSIGNOR/SENDER		2. TRANSPORT DOCUMENT NUMBER	3. PAGE 1 OF PAGES	4. SHIPPER'S REFERENCE (TCN)
5. FREIGHT FORWARDER'S REFERENCE	6. CONSIGNEE		7. CARRIER <i>(To be completed by the carrier)</i>	
24-HOUR EMERGENCY ASSISTANCE TELEPHONE NUMBERS:				
DOD NON-EXPLOSIVE HAZMAT: 1-800-851-8061 AT SEA: COLLECT (804) 279-3131	DOD HAZ CLASS 1 (EXPLOSIVES) ONLY: COLLECT (703) 697-0218/0219	CHEMICAL/BIOLOGICAL WARFARE MATERIAL: (410) 436-3044/7211/6455 AFTER DUTY HOURS: (410) 436-2148 - Ask for TEU S3	DOD SECURE HOLDING: 1-800-524-0331 OIL/CHEMICAL SPILLS: NRC & TERRORIST HOTLINE: 1-800-424-8802 AT SEA: COLLECT 202-267-2675	DOD RADIOACTIVE MATERIALS: COLLECT ARMY: (703) 697-0218 USAF: (202) 767-4011 DLA: (717) 770-5283 USN/MC: Use 24-hour emergency response number provided by activity.
8. THIS SHIPMENT IS WITHIN THE LIMITATIONS PRESCRIBED FOR: <i>(X as applicable)</i> <input type="checkbox"/> MILITARY VESSEL <input type="checkbox"/> COMMERCIAL VESSEL <input type="checkbox"/> HIGHWAY/RAIL			9. CONTAINER PACKING CERTIFICATE OR VEHICLE PACKING DECLARATION, DD FORM 2781, IS ATTACHED <i>(X if applicable)</i>	
10. VOYAGE DOCUMENT NUMBER AND SAILING DATE <i>(To be completed by the carrier)</i>		11. PORT/PLACE OF LOADING		
12. PORT/PLACE OF DISCHARGE		13. DESTINATION		
14. SHIPPING MARKS	DESCRIPTION OF GOODS <i>(UN No., PSN, HC, SHC, PG, number and kind of package, and additional information as required by regulation)</i>		NET MASS/QTY <i>(kg/l)</i>	GROSS MASS <i>(kg)</i>
15. CONTAINER IDENTIFICATION NO./ VEHICLE REGISTRATION NO.	16. SEAL NUMBER(S)	17. CONTAINER/VEHICLE AND TYPE		18. TARE MASS <i>(kg)</i>
19. ADDITIONAL HANDLING INFORMATION				
20. RECEIVING ORGANIZATION RECEIPT Received the above number of packages/containers/trailers in apparent good order and condition, unless stated hereon:				
a. RECEIVING ORGANIZATION REMARKS				
b. HAULER'S NAME	c. VEHICLE REGISTRATION NO.	d. SIGNATURE AND DATE	e. DRIVER'S SIGNATURE	
21. SHIPPER PREPARING THIS FORM				
SHIPPER'S DECLARATION. I hereby declare that the contents of this consignment are fully and accurately described above by the Proper Shipping Name, and are classified, packaged, marked, and labeled/placarded and are in all respects in proper condition for transport according to the international and national government regulations.				
a. NAME OF COMPANY/MILITARY UNIT		b. NAME/STATUS OF DECLARANT/CERTIFIER		
c. PLACE AND DATE		d. SIGNATURE OF DECLARANT/CERTIFIER		

**INSTRUCTIONS FOR COMPLETING DD FORM 2890,
DOD MULTIMODAL DANGEROUS GOODS DECLARATION**

Item 1. Shipper/Consignor/Sender. Enter the address and telephone number where the HAZMAT was certified.

Item 2. Transport Document Number. The vessel manifest number to which the Multimodal Dangerous Goods Declaration will be attached may be entered in this block. The shipper need not enter this number. The accepting operator may enter it at the time it is assigned. This block may also be left blank.

Item 3. Page ___ of ___ Pages. Enter the page number and total number of pages. Example: Page 1 of 1.

Item 4. Shipper's Reference Number (TCN). Enter the 17-character TCN.

Item 5. Freight Forwarder's Reference. Leave blank.

Item 6. Consignee. Enter the six-digit DODAAC and/or the in-the-clear geographical location of the ultimate consignee (if known). For shipments of infectious substances, enter also the full address, name and telephone number of a responsible person for contact in an emergency.

Item 7. Carrier. Enter Vessel Carrier Name. To be completed by the carrier.

24 Hour Assistance Telephone Number(s). Circle applicable emergency number(s).

Item 8. Shipment Within the Limitations Prescribed for Military Vessel/Commercial Vessel/Highway/Rail. Mark X in the appropriate block.

Item 9. Container Certification/Vehicle Declaration. Declarant must mark X if applicable. U.S. Coast Guard or port officials may require verification of the container certification/vehicle declaration. DD Form 2781 is a detailed checklist which meets USCG/Customs requirements. DD Form 2781 must be signed and attached to DD Form 2890.

Item 10. Voyage Document Number and Sailing Date (To be completed by the carrier). Enter the voyage document number and the date of sail.

Item 11. Port/Place of Loading. Enter the three-digit POE code and/or the in-the-clear geographical location of the port of embarkation.

Item 12. Port/Place of Discharge. Enter the three-digit POD code and/or the in-the-clear geographical location of the port of debarkation.

Item 13. Destination. Enter destination address.

Item 14. Shipping Marks.

1. Enter the UN Number preceded by the letters "UN".
2. Enter the Proper Shipping Name.
3. Enter the primary hazard class and division number. For Class 1 material include the compatibility group letter. Any assigned subsidiary hazard class or division will be entered following the primary class in parenthesis.
4. Enter the Packing Group when assigned.
5. Enter additional information from the IMDG, Chapter 5.4, as required (i.e. Marine Pollutant, Flashpoint, Toxic Inhalation Hazard, RQ, etc.).
6. Enter the number and kind of packaging.

Item 14. Shipping Marks (Continued).

7. Enter the total quantity of dangerous goods of each item of HAZMAT bearing a different Proper Shipping Name, UN Number or Packing Group. For Class 1 material this quantity will be the net explosive mass (number of rounds being shipped X net explosive weight per round = net mass/qty).

8. Enter the gross weight of the shipment for each item of HAZMAT bearing a different Proper Shipping Name, UN Number or Packing Group.

Item 15. Container ID Number/Vehicle Registration Number. Enter ID number of the container or vehicle registration number.

Item 16. Seal Number(s). Enter seal number installed on container.

Item 17. Container/Vehicle and Type. Enter type and size of container or vehicle description.

Item 18. Tare Mass (kg). Enter tare weight of the container.

Item 19. Additional Handling Information. Optional.

If applicable, provide additional handling instructions.

Enter the Emergency Response Guide (ERG) Number(s) of the HAZMAT and attach the specific ERG page to DD Form 2890.

If applicable, drivers transporting regulated HAZMAT on European highways must be provided Transport Emergency Cards (TREM CARDS) in the host nation language which must be attached to the shipping papers.

Item 20. Receiving Organization Receipt. Leave blank as this will be filled out by the receiving organization. Signing this block states that the shipment is in good order, unless otherwise noted.

Item 21. Shipper Preparing This Form.

- a. Name of Company/Military Unit. Enter the name of company.
- b. Name/Status of Declarant/Certifier. Enter the name and status of the person signing the form.
- c. Place and Date. Enter the place and date the material was certified.
- d. Signature of Declarant/Certifier. The person who certifies on behalf of DOD that the shipment complies with the applicable regulatory requirements must sign the form.

DOD MULTIMODAL DANGEROUS GOODS DECLARATION*(Continuation Sheet)*

1. SHIPPER/CONSIGNOR/SENDER	2. TRANSPORT DOCUMENT NUMBER	3. PAGE OF PAGES	4. SHIPPER'S REFERENCE (TCN)
-----------------------------	---------------------------------	----------------------------	------------------------------

14. SHIPPING MARKS	DESCRIPTION OF GOODS <i>(UN No., PSN, HC, SHC, PG, number and kind of package, and additional information as required by regulation)</i>	NET MASS/QTY <i>(kg/l)</i>	GROSS MASS <i>(kg)</i>
-----------------------	--	-------------------------------	---------------------------

CONTAINER PACKING CERTIFICATE OR VEHICLE PACKING DECLARATION

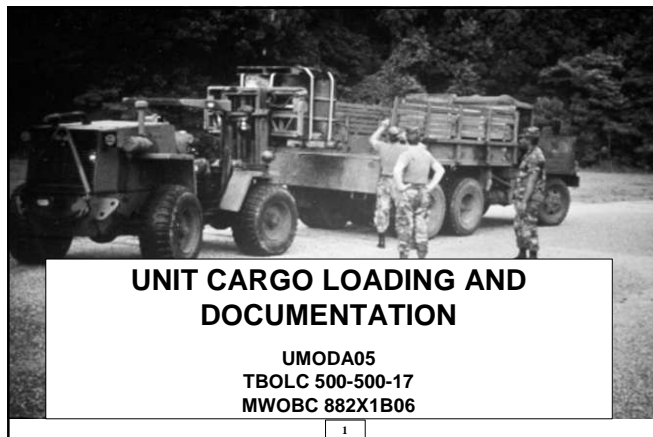
Person responsible for packing the cargo transport unit (vehicle/container) will complete the checklist. Cross out "vehicle" or "container", as applicable. After completion, sign the certificate.

1. It is declared that the undersigned has visually inspected (Container/Vehicle) Number: _____
(cross out whichever item does NOT apply) and it has been loaded/packed in accordance with the provisions of 5.4.2.1 (IMDGC) and CFR 49 and that (indicate "N/A" for all items that do NOT apply):

- | | |
|----|--|
| a. | The cargo transport unit (container/vehicle) was clean, dry, and apparently fit to receive the goods. |
| b. | If the consignment includes goods of class 1, other than 1.4, the cargo transport unit (container/vehicle) is structurally serviceable in conformity with 7.4.6 (IMDGC). |
| c. | Goods that should be segregated, have not been packed together onto or in the cargo transport unit (container/ vehicle) (unless approved by the competent authority concerned in accordance with 7.2.2.3 (IMDGC)). |
| d. | All packages have been externally inspected for damage, leakage, or sifting, and only sound packages have been packed. |
| e. | Drums have been stowed in an upright position, unless otherwise authorized by the competent authority. |
| f. | All packages have been properly packed onto or in the cargo transport unit (container/vehicle) and secured. |
| g. | When dangerous goods are transported in bulk packagings, the cargo has been evenly distributed. |
| h. | The cargo transport unit (container/vehicle) and packagings therein are properly marked, labeled, and placarded. |
| i. | When solid carbon dioxide (CO ² - dry ice) is used for cooling purposes, the cargo transport unit (container/vehicle) is externally marked or labeled in a conspicuous place, such as the door, and with the words: "DANGEROUS CO²- GAS (DRY ICE) INSIDE. VENTILATE THOROUGHLY BEFORE ENTERING" . |
| j. | The dangerous goods transport document required in 5.4.1 (IMDGC) has been received for each dangerous goods consignment packed in the cargo transport unit (container/vehicle). |
| k. | If container is stowed with a vehicle and/or mechanical equipment with fuel in the tank, a warning label has been affixed to access doors legibly reading: "WARNING - MAY CONTAIN EXPLOSIVE MIXTURES WITH AIR - KEEP IGNITION SOURCES AWAY WHEN OPENING" in accordance with §176.905(a)(5), 49 CFR. |

2. PERSON RESPONSIBLE FOR PACKING

a. PRINTED NAME (<i>Last, First, Middle Initial</i>)	b. RANK/GRADE	c. TITLE	d. ORGANIZATION
e. PLACE PACKED	f. SIGNATURE		g. DATE (YYYYMMDD)



References

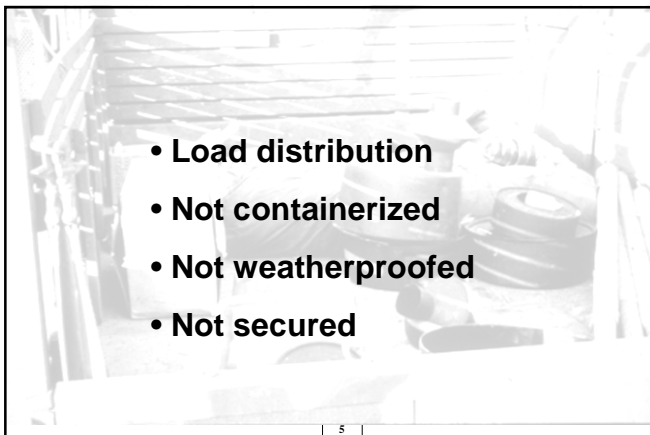
- FM 3-35.4, *Deployment Fort-to-Port*, Appendix I
 - FM 4-01.011, *Unit Movement Operations*, Appendix D
 - FM 55-30, *Army Motor Transport Units and Operations*, Chapter 10
 - FORSCOM/ARNG Reg 55-1, *Unit Movement Planning*, Chapter 5
 - TB 55-46-1, *Standard Characteristics for Transportability of Military Vehicles and Outsized/Overweight Equipment*
 - TEA PAM 55-20, *Tiedown Handbook for Truck Movements*
- 2

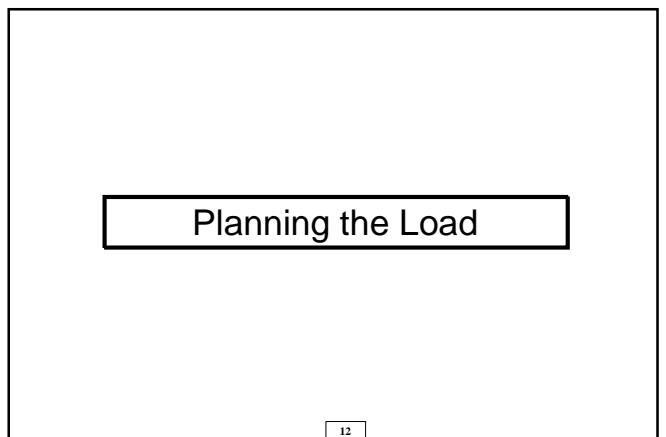
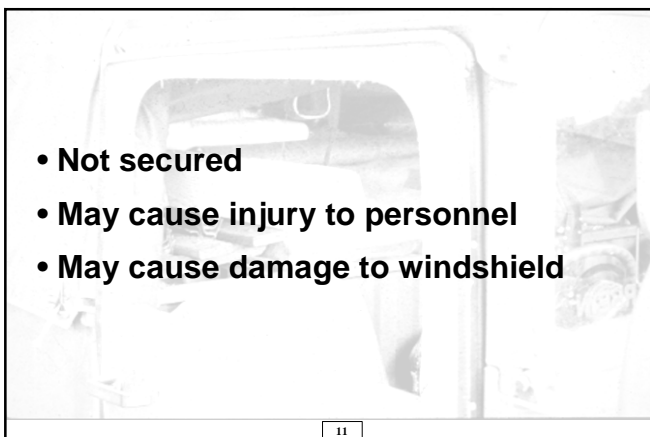
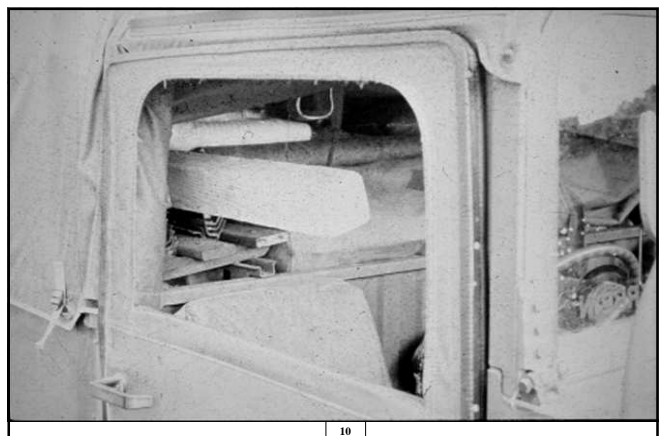
Scope of Lesson

- **Load Plan Cycle**
 - Planning the Load
 - Testing the Load
 - Inspecting the Load
 - Documenting the Load



- **Load distribution**
- **Not containerized**
- **Not weatherproofed**
- **Not secured**





Planning the Load

- Planning for packing & loading unit equipment is an important deployment preparation activity
 - Involves identifying actual space, weight, packaging material & external transport requirements
 - Proper planning saves valuable time when ordered to deploy

13

Cube

- To determine how much space is needed, planners must **first determine** how much cargo needs to be moved
- The primary factor is **cubic feet of space required** for cargo shipments



14

Cube (Cont)

- Determine Volume in cubic feet
 - Step 1: Take measurements of the length, width and height in inches
 - Step 2: Multiply length x width x height
 - Step 3: Divide the answer by 1728 to get volume in cubic feet (1728 inches in a cubic foot)

15

Cube (Cont)

- A - Add cubic feet measurements of all cargo together to get the total cubic feet requirement
- B - Add cubic feet measurements of all cargo vehicles to get the total cubic feet of cargo carrying space available
- Subtract B from A to determine external cargo lift assets required, if any
- IT IS NEVER THAT SIMPLE!!!!!!

16

Cube (Cont)

- We do **add cubic foot** measurements of **all cargo** to get total cubic foot requirement
- Not all equipment comes in a rectangular shaped box
- Odd sized and heavy items require other considerations
- Maximize use of available space
- Usually will cube out before weigh out

17

Weight

- Weight of most military cargo is marked on the package. Unmarked cargo must be weighed before loading
- Total shipment weight should equal the sum of the individual cargo weights
- **Weigh loaded** vehicle and record on AUEL
- **Dense cargo** can cause a vehicle's weight limit to be reached before the cargo space is filled

18

Vehicle Data Plate

- Axle weight capacity information is located on the **vehicle data plate**
- 3 different **loading weights**:
 - Empty
 - Cross country
 - Highway vehicle weight

Maximum loaded vehicle weight should always be the cross country weight

19

Vehicle Data Plate (Cont)

- Never exceed weight capacity of vehicle indicated on vehicle data plate

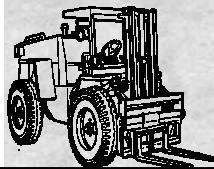
WEIGHT & DIMENSION DATA				TRUCK, CARGO, 5 TON 6-6 M54 W	
				FEDERAL STOCK NO. 2320-835-8335	
				VEHICLE IDENT. NO.	
				MFG. BY	
				CONT. NO.	
				INSPECTED	
				US PROPERTY	

- Always use cross country weight limits

20

Material Handling Equipment

- Consider **capabilities** of available material handling equipment (MHE)
- Ensure MHE is **staged** along with required packing material prior to loading
- MHE capacity must be equal to or greater than the load
- Determine **external MHE requirements** (consider destination)



21



MHE

22

Loading Considerations

- Consider likely **deployment configuration** for vehicles carrying secondary loads
- If deploying by rail, air or sea, then the secondary load **cannot exceed reduction dimensions**
- TB 55-46-1 provides base and reduced cargo body dimensions for vehicles

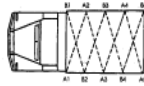
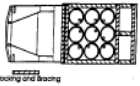
23

Testing the Load

24

STEP 6: Develop Vehicle Load Plans for Unit Equipment

- Don't exceed **payload capacity**
- **Document** planned loads for organic vehicles and trailers carrying secondary loads (FORSCOM 285-R or DA 5748-R)
- Vehicles may have to be **reduced** according to mode of transportation and type of move
- Consider vehicle **modifications** (approved by SDDC TEA) and reflected in AUEL/DEL or OEL/UDL
- **Test planned loads (every year for AC, every two years for RC)**
- **Weight/record planned loads**



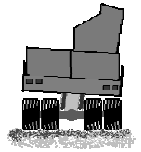
Ref: FORSCOM/ARNG Reg 55-1, pp 32

25

FM 4-01.011, p.2-5/6

Balancing Considerations

- Balancing weight is important
 - Unbalanced loads cause damage
- Rules of thumb on weight balance:
 - Load **heavy cargo on the bottom**
 - **Distribute** heavy items evenly over vehicle bed
 - Check vehicle data plate for **maximum axle weights**



Ref: FM 55-30, Para 10-5b

26

Load Considerations

- Pack cargo so it **doesn't shift** (use B & B)
- Keep load **as low as possible** in vehicle
- Consider **multi-stops** when loading
- Load items of **uniform** size and shape (where possible) for easier tie-down
- Use **boxes** and containers to move smaller items

LOAD SMART!!! LOAD SAFE!



Ref: FM 55-30, Para 10-5b

27

**Testing the Load
- Loading Vehicles -**

Select the right vehicle for the right job



Wrong



Right

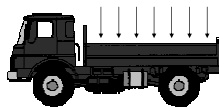
Ref: FM 55-30, Para 10-5a

28

**Load Placement in Trucks
& Semitrailers (Cont)**

- Tires, axles & frame are designed to carry a load distributed as shown

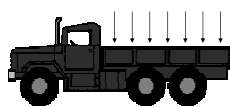
COE Truck



20%

80%

Conventional Truck



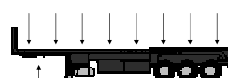
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80%

29

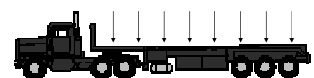
**Load Placement in Trucks
& Semitrailers (Cont)**

- Distribute trailer loads equally between the rear tires & the fifth wheel to ensure load transfers to the tractor



45%

55%



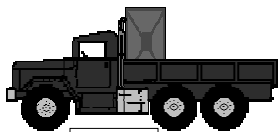
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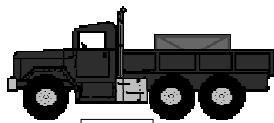
30

Load Placement in Trucks & Semitrailers (Cont)



Wrong

Load can bend the frame, overload front tires and make steering harder



Right

Place heavy part of load near rear axle for proper tire loading and to keep frame from bending

31

Load Placement in Trucks & Semitrailers (Cont)



Right

Set a concentrated load just ahead of the rear axle with the longest side on the floor

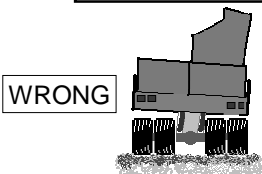


Wrong

Load can bend the frame, overload rear tires and make steering almost impossible

32

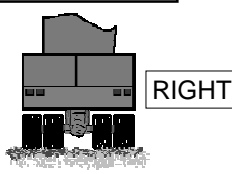
Load Placement in Trucks & Semitrailers (Cont)



WRONG

This placement overloads one spring and set of tires, brakes could lock on the light side causing skids

33



RIGHT

Nothing is overloaded, frame will not twist and stress suspension

Containers

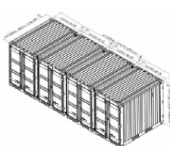
- Containers provide:
 - Security (seal protection)
 - Weather Protection
 - Less damage to the cargo (if loaded properly)
 - Ease in handling
 - Concentration of unit supplies/equipment

34

AVAILABLE CONTAINERS

- Requested through the ITO

QUADCON



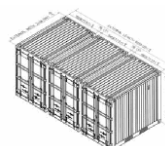
Coupling system

35

AVAILABLE CONTAINERS (Cont)

- Requested through the ITO

TRICON



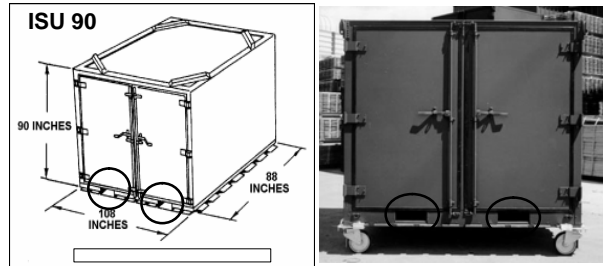
36

AVAILABLE CONTAINERS (Cont)



37

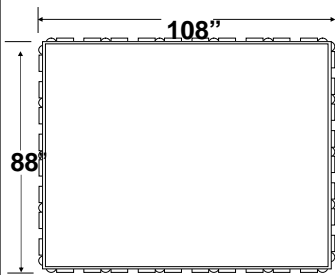
ISU



38

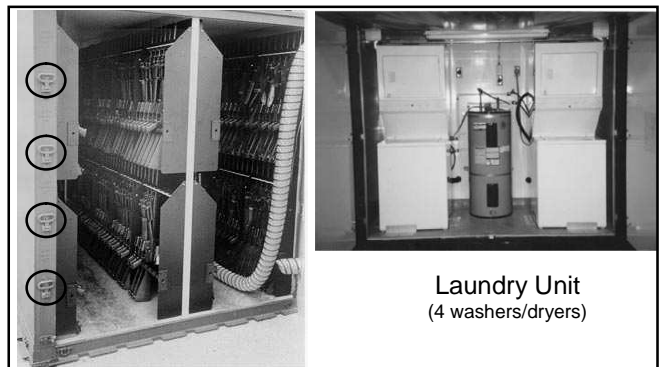
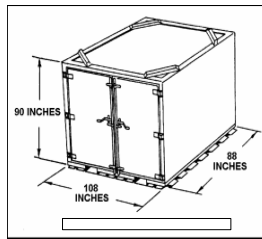
ISU (Cont)

463L PALLET



39

ISU 90



40



41

Container Inspection - Exterior

- Inspect Containers **Prior to Stuffing** (exterior)
 - **Identification markings** must be readable
 - **Welds** must not be broken, cracked or missing
 - Top/bottom **rails** should not be damaged
 - **Door frame** must not be cut, broken, or distorted
 - **Locking bar** guides must be serviceable
 - **Roof** panels should not be corroded, dented or punctured

42

Container Inspection - Interior

- Inspect Containers **Prior to Stuffing** (interior)
 - Ensure **no tears or holes** in sides and roof and that floor boards are serviceable
 - **Corner posts** should not be dented, fractured, or torn
 - Ensure **no rust**, mold or mildew and check for general cleanliness
- There may be an added cost for exchanging a container after it has been accepted

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Container Considerations

- Consider how you will **receive containers**
 - If you load a container that is **on a chassis**, you will need a **ramp or MHE** for loading
 - If you load a container **without a chassis**, you will **need MHE** to place the container on a chassis or truck/trailer bed once loading is completed
- Consider **customs** inspection requirements (inspect before the container is loaded)
- Consider BBPCT requirements

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Stuffing Containers

- Stuffing Containers
 - **Distribute** weight evenly over the container floor
 - **Heavy cargo on bottom**, lighter cargo on top
 - Fill space between cargo and containers sides with **blocking and bracing**
 - Keep **CB** as near as possible to the center
 - Do not overload the container

45

Load Placement in Containers



Wrong

This placement shortens tire life & bends the trucks rear-axle housing; applying trailer brakes may lock the wheels & cause flat spots & skidding



Wrong

This placement overloads the trailer rear wheels so that brakes will not function properly & rubber scuffs away

46

Load Placement in Containers (Cont)



Right

This container is loaded with the load spread low on the floor. (What is missing from picture?)

47

Record Weight

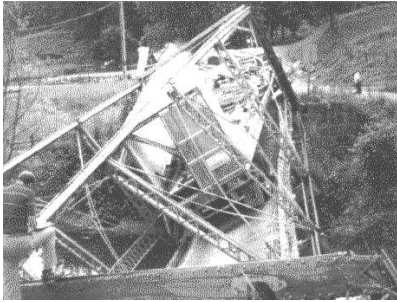
- Record weight & compare to the AUEL
 - Verify the actual weight & dimensions of each piece of cargo, and vehicle with cargo
 - Update AUEL if discrepancies are found
- You must physically weigh each vehicle after it is loaded

NEVER EXCEED VEHICLE'S CROSS COUNTRY WEIGHT LIMITS

48

Lessons Learned

- Tractor trailer that overloaded a bridge



49

SUMMARY

- **Planning the Load**
 - How to calculate the cubic feet required for cargo shipments, and how to determine if external cargo lift assets are required
 - Vehicle weight limitations
- **Testing the Load**
 - Loading consideration for vehicles
 - Use of containers, including loading considerations

50

Inspecting the Load

51

Preparing Vehicles For Shipment

- Thoroughly **clean** vehicles (Customs)
- Ensure vehicles are **mechanically sound** (free of leaks, drips and other defects)
- Fill vehicle **fuel tanks** to a maximum of 3/4 full
- Do not fill the fuel tanks of trailer mounted equipment (such as generators) to more than 1/2 a tank
- Ensure **tie-down/lifting** devices are serviceable

52

Preparing Vehicles For Shipment (Cont)

- Secure **ignition keys** to steering wheel with wire
- Ensure **fire extinguishers** are in approved brackets
- Do not lock driver compartments
- Consolidate **radios and crew-served weapons** in separate secured containers
- **Basic Issue Items** (jack, tools) stored in tool box (locked/banded)

53

Preparing Vehicles For Shipment (Cont)

- **Reduction**
 - **Operational configuration** for moving as convoy (reduction will occur in POE staging area if required)
 - When vehicles are shipped
 - **Reduce vehicle length and width** by folding in side mounted mirrors
 - Remove antennas
 - Keep windshields and cab canvas in the 'up' position
 - Leave exhaust stacks in place
 - Reduce further only of specified in the Movement Order

54

Securing Cargo in Vehicles and Containers

55

Packing Materials

- Types of packing materials:
 - Bubble wrap
 - Foam packing
 - Corrugated cardboard
 - Desiccant to dehumidify
 - Pneumatic & mechanical holding devices
- Materials also needed to close and secure boxes/cartons

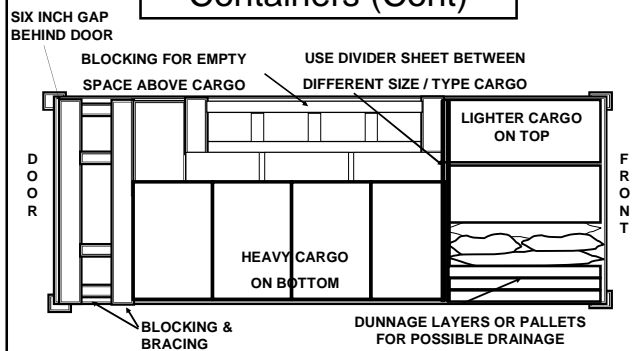
56

Containers

- Rules for loading containers:
 - **Block & brace** the cargo - bottom, sides & front (stay **6 inches** away from the door)
 - **Distribute** the weight evenly - heavy items on the bottom of the container - never overload
 - Package liquid on **dunnage**
 - **Group cargo** according to use at destination for ease of handling when off-loading

57

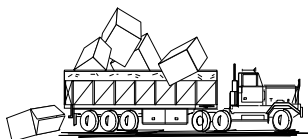
Containers (Cont)



58

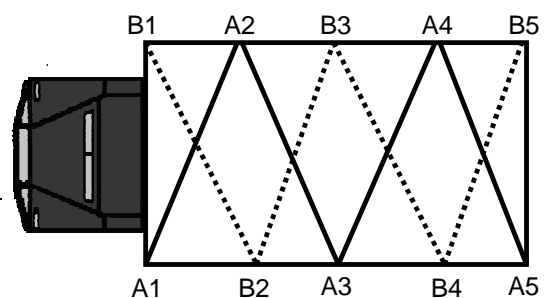
Blocking, Bracing, Packing, Crating, Tiedown (BBPCT)

- Units are responsible for securing their cargo
- Lashing should be:
 - 1/2" manila rope, wire rope or banding material
 - Secure rope to vehicle via hooks/rings on the vehicle's sides



59

Lashing



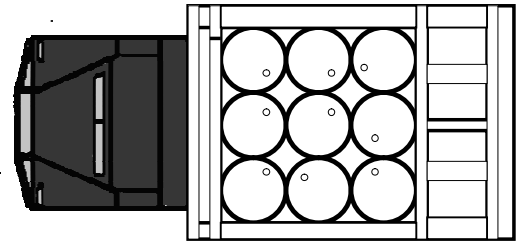
60

Blocking & Bracing

- Your unit is responsible for the blocking & bracing of unit equipment and containers
 - Use crib blocking whenever possible
 - Block cargo on all sides: front, back, sides & door area
 - Ensure there is no metal-to-metal contact (Use plywood, wood or cardboard)

61

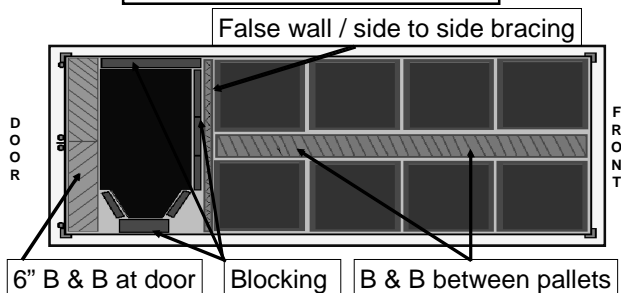
Blocking & Bracing a 2-1/2 Ton Truck Rear



- Denotes Blocking & Bracing

62

Blocking & Bracing a Container



63

Loading Containers

- Once a container is blocked and braced:
 - Close** and **seal doors** carefully (use serial numbered seals if provided)
 - Weigh** the container and check its documentation
 - Place one copy of its **packing list** on the inside of the container door and one on the outside (in clear plastic sleeve for weatherproofing)
 - If carrying HAZMAT; load, label, and **placard** as appropriate

64

Cargo Protection

- Protecting cargo from weather & elements is a unit responsibility
 - Place **dunnage over corners** to protect canvas
 - Cover** open topped vehicles with canvas before lashing
 - Protect** crew-served weapons from elements with a coating of grease

65

Inspecting the Load

- Once loading is completed, **inspect** the vehicle to ensure that:
 - Its overall **dimensions** (length, width and height) are in **compliance** with the applicable reduction policy
 - Its overall **weight is in compliance** with stated vehicle limitations

66



67



68

Marking of Vehicles

- Proper marking of unit vehicles and equipment:
 - FORSCOM/ARNG Reg 55-1, requires marking on front and back
 - Use 2" lettering placing **UIC** and **SUN** on bumpers
 - Suggested to **mark all secondary loads** that may be moved separately
- See App G to FORSCOM/ARNG Reg 55-1

69

Special Cargo Considerations

70

Types of Special Cargo

- Hazardous cargo (discussed in another lesson)
- Other Categories
 - Sensitive items
 - Classified material
 - Pilferable items

71

Sensitive Items



- Sensitive cargo is cargo that could **threaten public safety if compromised** (eg. weapons)
- Sensitive cargo must be **secured and identified to port personnel** so they can provide appropriate security
- **Remove crew-served** weapons from vehicles. Place them in containers that are sealed and secured with an approved locking device
- Provide **guards or escorts** when shipping sensitive material by rail

Ref: FM 4-01.011, Appendix D, pg D-7

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Sensitive Items (Cont)

- **Rules** for sensitive cargo:
 - **Packing material** must be strong and durable enough to provide security protection in transit
 - Containers, vehicles or compartments must be **secured** with appropriate locking device. Also place a **serial-numbered seal** on the door (serial number entered on unit packing list)
 - Sensitive items must be **identified** in the commodity code of the unit's AUEL/DEL (OEL/UDL)
 - The outside of container/vehicle/compartments must **NOT indicate** in any way that it contains sensitive items

Ref: FM 4-01.011, p.D-7

73

Classified Cargo

- Classified cargo is cargo that requires protection in the interest of national security (eg. codes)
- Classified material must be enclosed in **two sealed containers**: inner and outer container (comply with AR 380-5)
- Must **NOT be identified as classified on the outer container**
- **Packing material** must be strong and durable enough to provide security protection in transit, to keep items from breaking out of the container and to help detect any tampering with the container - wrapping must conceal classified characteristics
- Not to be stored in any detachable storage compartment, such as vehicle trailers

Ref: FM 4-01.011, p.D-5

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Classified Cargo (Cont)

- When **crossing international borders**, arrangements must be made to ensure that customs, border or other inspectors (either US or foreign) do not open the classified material
- Containers, vehicles or compartments containing classified material must be secured with an **appropriate locking device**. Also place a **serial-numbered seal** on the door (serial number entered on packing list)
- Unit authorizing the transportation of classified equipment must **notify their ITO/MCT** and an appropriate carrier in advance
- Shipping classified material by rail may require the commander to **provide guards or escorts**
- When traveling by motor convoy, escorts must maintain **constant surveillance of classified material** (stay within escort's personal possession/observation at all times)

Ref: FM 4-01.011, p.D-5

75

DD Form 1907

- DD Form 1907

SIGNATURE AND EARLY RECORDS		DATE	
Signature of the Commanding Officer		Date	
1. The Commanding Officer shall sign this form and forward it to the appropriate authority for processing.		2. The Commanding Officer shall sign this form and forward it to the appropriate authority for processing.	
3. The Commanding Officer shall sign this form and forward it to the appropriate authority for processing.		4. The Commanding Officer shall sign this form and forward it to the appropriate authority for processing.	
5. The Commanding Officer shall sign this form and forward it to the appropriate authority for processing.		6. The Commanding Officer shall sign this form and forward it to the appropriate authority for processing.	
7. The Commanding Officer shall sign this form and forward it to the appropriate authority for processing.		8. The Commanding Officer shall sign this form and forward it to the appropriate authority for processing.	
9. The Commanding Officer shall sign this form and forward it to the appropriate authority for processing.		10. The Commanding Officer shall sign this form and forward it to the appropriate authority for processing.	
11. The Commanding Officer shall sign this form and forward it to the appropriate authority for processing.		12. The Commanding Officer shall sign this form and forward it to the appropriate authority for processing.	
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76

Pilferable Items

- Pilferable items are items of value to individuals that can be readily removed and concealed (radios, binoculars, compasses, etc.)
- Consider removing pilferable items from vehicles and packing them together in a separate container (also facilitates movement tracking)



77

Security

- Be prepared for acts of sabotage, espionage and terrorism in both CONUS and OCONUS theaters
- Guard against theft and pilferage
- Degree of security required will determine the need for outside support
- References: FM 100-20, AR 380-5



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Documenting the Load

79

Forms Used

• Forms:

- FORSCOM Form 285-R, Vehicle Load Card
- DD Form 1750, Packing List
- DA Form 5748-R, Shipment Unit Packing List and Load Diagram
- DD Form 1387 - Military Shipment Label
- Destination Placard
- Radio Frequency Identification Tags
- Shippers Declaration of Dangerous Goods
- DD Form 626, Motor Vehicle Inspection (Transporting Hazardous Materials)
- DD Form 836, Dangerous Goods Shipping Paper / Declaration and Emergency Response Information

80

FORSCOM FORM 285-R Vehicle Load Card

81

FORSCOM Form 285-R

- **Vehicle Load plans** are documented on FORSCOM Form 285-R
 - FORSCOM Form 285-R must be filled out for all vehicles which have a cargo load
 - Load plans are kept on file as part of the unit movement plan and revised / tested annually

82

FORSCOM Form 285-R (Cont)

- Load cards can also be used to check cargo at terminals:
 - Check for loss or damage
 - Ensure particular cargo can be located when needed
- See example Form 285-R in FORSCOM/ARNG Reg 55-1, page 35



83

FORSCOM FORM 285-R Vehicle Load Card

VEHICLE LOAD CARD (TB 55-46-1 & 2) and (FORSCOM Reg 55-1)										
UNIT/UC		VBH LIN NO		NOMBN/MOD NO		SEC/PLT ASGD		SHIPMENT UNIT NO		DATE COMPLETED
LENGTH OF VBH		WIDTH OF VBH		HEIGHT OF VBH		VBH EMPTY WT				
OPERATIONAL	REDUCED	OPERATIONAL	REDUCED	OPERATIONAL	REDUCED					
CARGO AREA		CARGO AREA		CARGO AREA CUBIC FT						
LENGTH	WIDTH	HEIGHT	OPERATIONAL		REDUCED					
NOT COMPUTED FOR HS TO MS		INCHES FROM		TEST LOAD VERIFIED BY		DATE				
CB/OG IS		INCHES FROM		CARGO COM						

FORSCOM Form 285-R

84

FORSCOM FORM 285-R Vehicle Load Card (Cont)

Place Bumper No. of vehicle here

Bumper # HQ 7-T (TB 55-46-1 & 2) and (FORSCOM Reg 55-1)					
UNIT/UIC	VEH LIN NO	NOMEN/MOD NO	SEC/PLT ASGD	SHIPMENT UNIT NO	DATE COMPILED
316th Trans Co WADSAA	X40009 01	TRK CARGO 2-1/2 TON M35A2			
LENGTH OF VEH		WIDTH OF VEH		HEIGHT OF VEH	
VEH EMPTY WT					

Unit Name and UIC

Vehicle LIN and Index No.
Nomenclature (description)
and Model No. of vehicle

Ref: FORSCOM/ARNG Reg 55-1, p.41

85

FORSCOM FORM 285-R Vehicle Load Card (Cont)

Bumper # HQ 7-T (TB 55-46-1 & 2) and (FORSCOM Reg 55-1)					
UNIT/UIC	VEH LIN NO	NOMEN/MOD NO	SEC/PLT ASGD	SHIPMENT UNIT NO	DATE COMPILED
316th Trans Co WADSAA	X40009 01	TRK CARGO 2-1/2 TON M35A2	A Sec 2nd Plt	D0007	2001/11/30
LENGTH OF VEH		WIDTH OF VEH		HEIGHT OF VEH	
VEH EMPTY WT					

Section / Platoon

Shipment Unit No.
(assigned by AUEL/OEL)

Date Compiled (YYYY/MM/DD)
(Complete in pencil)

Ref: FORSCOM/ARNG Reg 55-1, p.41

86

FORSCOM FORM 285-R Vehicle Load Card (Cont)

LENGTH OF VEH		WIDTH OF VEH		HEIGHT OF VEH		VEH EMPTY WT
OPERATIONAL	REDUCED	OPERATIONAL	REDUCED	OPERATIONAL	REDUCED	
265	265	106	96	113	81	13180
CARGO AREA				CARGO AREA CUBIC FT		

Depending on the planned shipping configuration, either operational and/or reduced entries are made under length, width, and height of the vehicle.

87

FORSCOM FORM 285-R Vehicle Load Card (Cont)

'Under Bows Cargo Body Loading Height' not 'Cargo Deck Bed Height'

CARGO AREA			CARGO AREA CUBIC FT	
LENGTH	WIDTH	HEIGHT	OPERATIONAL	REDUCED
147	88	60	443	277
NOT COMPUTED FOR HS TO MS				

Normally 'Under Bows Capacity'

Normally 'Top of Side Racks Capacity'

Dimensions and weight of the cargo area

88

FORSCOM FORM 285-R Vehicle Load Card (Cont)

NOT COMPUTED FOR HS TO MS		TEST LOAD VERIFIED BY		DATE
CB/CG IS	INCHES FROM			
132	FFE			
CARGO COMPARTMENT VIEW				

Center of balance /
center of gravity
(CB/CG) in inches

Point CB / CG
calculated from (ref
point) i.e. FFE =
forward front edge

Ref: FORSCOM/ARNG Reg 55-1, p.35

89

FORSCOM FORM 285-R Vehicle Load Card (Cont)

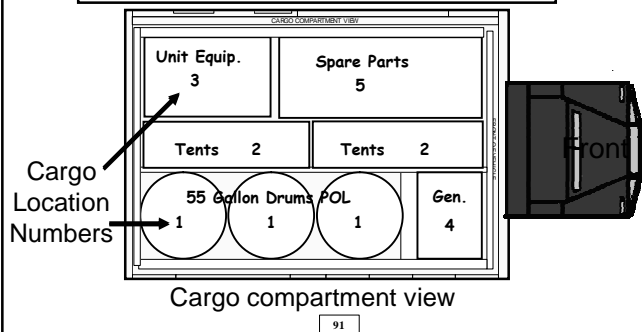
NOT COMPUTED FOR HS TO MS		TEST LOAD VERIFIED BY		DATE
CB/CG IS	INCHES FROM			
132	FFE	Steve Irwin		2002/11/30
CARGO COMPARTMENT VIEW				

Verified by
(in pencil)

Date verified (YYYY/MM/DD)
(in pencil)

90

FORSCOM FORM 285-R Cargo Compartment View



FORSCOM FORM 285-R Cargo Description

CARGO LOC NO	CARGO DESCRIPTION & TYPE PACK	NO OF ITEMS	PC CUBIC FT	TOTAL CUBIC FT	PC WT	TOTAL WT
1	POL - 55 Gal Drum	3	6.8	20.4	380	1140

Cargo description for the three 55 gallon drums shown in the Cargo Compartment View section of the previous page

FORSCOM FORM 285-R Cargo Description (Cont)

CARGO LOC NO	CARGO DESCRIPTION & TYPE PACK	NO OF ITEMS	PC CUBIC FT	TOTAL CUBIC FT	PC WT	TOTAL WT
1	POL - 55 Gal Drum	3				

Location number from drawing

Cargo description and type pack

Number of items in this location

FORSCOM FORM 285-R Cargo Description (Cont)

CARGO LOC NO	CARGO DESCRIPTION & TYPE PACK	NO OF ITEMS	PC CUBIC FT	TOTAL CUBIC FT	PC WT	TOTAL WT
1	POL - 55 Gal Drum	3	6.8	20.4	380	1140

CuFt of each piece

Total CuFt

Each piece weight (pounds)

Total weight of this location (pounds)

FORSCOM FORM 285-R Cargo Description (Cont)

CARGO LOC NO	CARGO DESCRIPTION & TYPE PACK	NO OF ITEMS	PC CUBIC FT	TOTAL CUBIC FT	PC WT	TOTAL WT
1	POL - 55 Gal Drum	3	6.8	20.4	380	1140
2	Tent -Crate	2	24	48	80	160

Location number from drawing

Number of items in this location

Total weight of this location

FORSCOM FORM 285-R Cargo Description (Cont)

LOAD PLUS VEHICLE WT	TDA/MTOE PARA AND LIN NO OF DRIVER
16650	Para 109 Line 03

FORSCOM Form 285-R, 1 Mar 93

EDITION OF 1 AUG 80 MAY BE USED. 5-1/2

Total weight of load plus empty vehicle weight (**AC**)

MTOE Paragraph and Line No. of Driver

Total weight of items loaded above the **red line** plus empty vehicle weight (**RC**)

Reserve Redline Concept

- **Redline concept** is only used by the **Reserve component**

Total cargo moving from HS to MS

CARGO LOC NO	CARGO DESCRIPTION & TYPE PACK	NO OF ITEMS	PC CUBIC FT	TOTAL CUBIC FT	PC WT	TOTAL WT
	Cargo moving from the HS to the MS and then onto the A / SPOE (deployed equipment)					
	Cargo moving only from the HS to the MS (non-deployed equipment)					

FORSCOM Form 285-R, 1 Mar 93

EDITION OF 1 AUG 80 MAY BE USED

5-1/2 X 8-1/2

97

FORSCOM FORM 285-R
Reverse

Reverse side of
form, top

Total weight of BBPCT material	1.0000
--------------------------------	--------

CARGO LOC NO	CARGO DESCRIPTION & TYPE PACK	NO OF ITEMS	PC CUBIC FT	TOTAL CUBIC FT	PC WT	TOTAL WT
	WEIGHT OF BBPCT MATERIALS					168
	TOTALS +	8		622		3470
NUMBERS OF DD FORM 1750 (PACKING LIST) THIS LOAD:		5				
REMARKS: (List of BBPCT materials needed this load to include weight)						

**Total No. of DD Form 1750
(Packing Lists) for vehicle**

**Totals (Items,
cube & weight)**

☐

FORSCOM FORM 285-R
Reverse (Cont)

NUMBER OF DD FORM 1750 (PACKING LIST) THIS LOAD =	
---	--

REMARKS (List of BBPCT materials needed this load, to include weight)

4 ea 4 X 4 X 12	80
12 ea 2 X 4 X 8	48
2 ea 5/8" Plywood 4 Ft X 8 Ft	40
	<u>168lbs</u>

Remarks:

List BBPCT materials needed
for cargo load - include weight

99

DD Form 1750

Packing List

100

DD Form 1750
Packing List

- DD Form 1750
 - Must be prepared for EACH multi-pack box or container

[illegible]

Ref: FORSCOM/ARNG Reg 55-1, p.43

101

DD Form 1750
Packing List (Cont)

PACKING LIST		316th Trans Co WADSAA	1	Vehicle Bumper No	HQ 7-T
3. END ITEM				2B. ORDER NO. 00021	

Packed by: Enter your unit name and UIC

Block 1: Number of inner boxes in the container (if the form relates to a box/crate enter '1')

Block 2a: Requisition No. - Change this to "Vehicle
Bumper Number" or "Commercial
Container Number"

Block 2b: Shipment Unit Number from AU~~EL~~/OEL
or DEL/UDL for the vehicle/container

102

DD Form 1750 Packing List (Cont)

PACKING LIST		2. ORDER NO.
3. END ITEM	4. DATE	2001/11/30
M35A2, Trk cargo 2 1/2 Ton	5. PAGE	1 of 1
BOX NO.	CONTENTS - STOCK NUMBER AND NOMENCLATURE	UNIT OF ISSUE
		INITIALS
		QUANTITIES REQUIRED
		TOTAL

Block 3: End Item - This is information on either the vehicle carrying the cargo (as shown) or the shipping container (eg. 'Box Shipping Metal 20ft. Serial #54280, HHC Seal #4325) - *Be specific*

Block 4: Date form compiled (YYYY/MM/DD) - Enter in pencil

Block 5: Page number - Enter page number & total number of pages

103

DD Form 1750 Packing List (Cont)

Column (a): Box No.

Use when shipping 2 or more boxes in a container to indicate the box number in which the items are packed. If form is for a single box/crate leave blank

BOX NO.	CONTENTS - STOCK NUMBER AND NOMENCLATURE
(a)	(b)

104

DD Form 1750 Packing List (Cont)

Column (b): Contents- Stock Number & Nomenclature -

List items within the box, crate or container. List the National Stock Number & nomenclature/description

Indicate BBPCT materials used and their weight at bottom

BOX NO.	CONTENTS - STOCK NUMBER AND NOMENCLATURE
(a)	(b)
	1234-23-2334-4454 Chair, folding field
	1234-23-2451-6284 Desk, field
	Wooden Crate

105

DD Form 1750 Packing List (Cont)

Column (d) Change to read: Packs, No. in box

Column (e) Change to read: "Weight of Each Item (lbs)"

Column (f) Change to read: "Total Weight (lbs)"

BOX NO.	CONTENTS - STOCK NUMBER AND NOMENCLATURE	UNIT OF ISSUE	QUANTITIES REQUIRED		
			INITIALS	QUANTITIES REQUIRED	TOTAL
(a)	(b)	(c)	(d)	(e)	(f)
			Packs No in box	Weight of Each Item (lbs)	Total Weight (lbs)

106

DD Form 1750 Packing List (Cont)

Column (c): Unit of Issue: such as ('ea') [each] for individual items (eg. computer), or 'BX' [box] for packaged multi-items (eg. Pens)

Column (d) Packs, No. in box

Column (e) "Weight of Each Item (lbs)"

BOX NO.	CONTENTS - STOCK NUMBER AND NOMENCLATURE	UNIT OF ISSUE	QUANTITIES REQUIRED		
			INITIALS	QUANTITIES REQUIRED	TOTAL
(a)	(b)	(c)	(d)	(e)	(f)
			Packs No in box	Weight of Each Item (lbs)	Total Weight (lbs)
		Ea	2	54	

107

DD Form 1750 Packing List (Cont)

Figure the total weight of this line and place in Column (f)

At the bottom of Column (f), draw a line and indicate the total weight of all listed items (ensure you include the weight of BBPCT materials used)

BOX NO.	CONTENTS - STOCK NUMBER AND NOMENCLATURE	UNIT OF ISSUE	QUANTITIES REQUIRED		
			INITIALS	QUANTITIES REQUIRED	TOTAL
(a)	(b)	(c)	(d)	(e)	(f)
			Packs No in box	Weight of Each Item (lbs)	Total Weight (lbs)
		Ea	2	54	108
		Ea	1	100	100
		NA	NA		150
					358

108

DD Form 1750 Packing List (Cont)

BOX NO. (a)	CONTENTS - STOCK NUMBER AND NOMENCLATURE (b)	UNIT OF ISSUE (c)	QUANTITIES REQUIRED		
			INITIAL OPERATION	RUNNING SPARE	TOTAL
	<p>Must add statement:</p> <p>"This box (container) does (does not) contain hazardous material IAW 49 CFR "</p>		Packs No in box	Weight of Each Item (lbs)	Total Weight (lbs)

109

DD Form 1750 Packing List (Cont)

6. THIS CERTIFIES THAT THE ITEMS LISTED HEREON ARE WITHIN THE SPECIFIED BOXES	
TYPED NAME AND TITLE	SIGNATURE
Steve Irwin, 2LT, Unit Mvt Officer	<i>Steve Croc Hunter Irwin</i>
DD Form 1750, SEP 70 (EG)	Designed using Perform Pro, WWS/DOR, Aug 94

Block 6: Name and title (normally primary or
alternate UMO)

Block 7: Signature

110

DA Form 5748-R

Shipment Unit Packing List and Load Diagram

111

DA Form 5748-R

- Can be used as a substitute for:
 - FORSCOM Form 285-R or
 - DD Form 1750
- Basically the combination of these two forms

112

DA Form 5748-R (Cont)

SHIPMENT UNIT PACKING LIST AND LOAD DIAGRAM				PAGE _____ OF _____		
For used this form, see RA5565, the parent agency is TRADOC.						
1. DERIVING UNIT		2. UIC OR NUMBER		3. TOY OR SERIAL NUMBER		
4. SHIPMENT UNIT DESCRIPTION				5. DETERMINED		
6. LENGTH	7. WIDTH	8. HEIGHT	12. LOCATION OF CG			
9. CUBE	10. EMPTY WEIGHT	11. LOADED WEIGHT				
13. PACKING LIST						
CARGO LOC NO. a	CONTENTS (Description and Nomenclature) b	TYPE PKG c	PKG QTY d	PKG WEIGHT e	TOTAL PKG WEIGHT f	

113

DA Form 5748-R (Cont)

14. CERTIFICATION. This certifies that items listed hereon are contained within the specified packages.			
a. TYPED NAME	b. GRADE	c. TITLE	
d. SIGNATURE		e. DATE	
DA FORM 5748-R, MAR 89			
USAFPCU 1.00			

114

DA Form 5748-R (Cont)

SHIPMENT UNIT PACKING LIST AND LOAD DIAGRAM For use of this form, see RM5565; the proponent agency is TRADOC			
1. DEPLOYING UNIT A Co. 1-10 IN WAB CAB	2. UIC OR BUMPER NO. A-41	3. TONOR SEAL NUMBER AWAF6A1\$0D00010XX	
4. SHIPMENT UNIT DESCRIPTION			
6. LENGTH	7. WIDTH	8. HEIGHT	12. LOCATION OF CG

Block 1: Deploying Unit
(Designation and UIC)

Block 2: Bumper Number/Container
Identification Number

Block 3: TCN or Container Seal Number

115

DA Form 5748-R (Cont)

SHIPMENT UNIT PACKING LIST AND LOAD DIAGRAM For use of this form, see RM5565; the proponent agency is TRADOC			
1. DEPLOYING UNIT A Co. 1-10 IN WAB CAB	2. UIC OR BUMPER NO. A-41	3. TONOR SEAL NUMBER 1 OF 1	
4. SHIPMENT UNIT DESCRIPTION M923A2, TRK CGO 5TON X40794 33			
6. LENGTH	7. WIDTH	8. HEIGHT	12. LOCATION OF CG
5. DATE PACKED 2002/11/30			

Block 4: Shipment Description
(model, nomenclature and
LIN/LIN Index)

Block 5: Date Packed
(YYYY/MM/DD)

Note: use this
block for
continuation
pages

116

DA Form 5748-R (Cont)

Blocks 6 to 12 relate to the vehicle/container

Block 6: Length Block 7: Width Block 8: Height

6. LENGTH 312	7. WIDTH 116	8. HEIGHT 121	12. LOCATION OF CG 132 from FFE
9. CUBE 2535	10. EMPTY WEIGHT 20930	11. LOADED WEIGHT 27904	

Block 9: Cube

Block 10: Empty Weight

Block 12:
Location of CG

Block 11: Loaded Weight

117

DA Form 5748-R (Cont)

Blocks 13 relates to the cargo (Packing List)

13. PACKING LIST		CONTENTS (Description and Nomenclature)	TYPE PKG C	PKG QTY d	PKG WEIGHT e	TOTAL PKG. WEIGHT f
CARGO LOC. NO. a	1	POL - 55 Gal Drum	Drum			

Column a:
Cargo
Location
Number

Column b:
Contents
(Description &
Nomenclature)

Column c:
Type Package

118

DA Form 5748-R (Cont)

CARGO LOC. NO. a	CONTENTS (Description and Nomenclature) b	TYPE PKG c	PKG. QTY. d	PKG. WEIGHT e	TOTAL PKG. WEIGHT f
1	POL - 55 Gal Drum	Drum	3	380	1140

Column d:
Package
Quantity

Column e:
Package
Weight
(each)

Column f:
Total
Package
Weight

119

DA Form 5748-R (Cont)

CARGO LOC. NO. a	CONTENTS (Description and Nomenclature) b	TYPE PKG c	PKG. QTY. d	PKG. WEIGHT e	TOTAL PKG. WEIGHT f
1	POL - 55 Gal Drum	Drum	3	380	1140
BBPCT	120 ft 4 x 4 100 ft 2 x 4 7 lb 2 x 4 4 CGU-1 CGO Straps				250

Indicate BBPCT materials used and
their weight at the bottom of block 13

120

DA Form 5748-R (Cont)

Block 14: "Certification: This certifies that items listed herein are contained within the specified packages"

Blocks a-c: Typed Name / Grade / Title

14. CERTIFICATION: This certifies that items listed herein are contained within the specified packages		
a. TYPED NAME	b. GRADE	c. TITLE
Russell Crowe	2LT	Unit Movement Officer
d. SIGNATURE	e. DATE	
Russell 'The Gladiator' Crowe	2002/11/30	
DA FORM 5748-R, MAR 89		

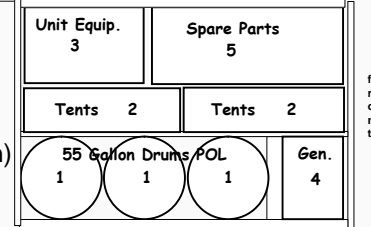
Block d: Signature Block e: Date (YYYY/MM/DD)

121

DA Form 5748-R Reverse

15. LOAD DIAGRAM (Sketch cargo storage in space below)

Block 15:
Load Diagram
(Sketch cargo
storage location)



122

DA Form 5748-R Reverse (Cont)

16. REMARKS

Tents are banded to warehouse pallet in two groups at location 2

Block 16: Remarks

REVERSE OF DA FORM 5748-R, MAR 89

123

Documentation Requirements

- All vehicles (containing secondary cargo), containers, 463L pallets, and crates **must display a separate DD Form 1750/DA Form 5748-R** (Packing List) showing its complete contents
- Items that are not transported in a container/crate - such as banded shovels, do not require a packing list. However, these items must be listed on the load diagram if they are loaded on a truck or in a container
- A packing list is not required for a container that already has a contents list - such as a toolbox
- Do not list classified material on packing lists

124

Documentation Requirements (Cont)

- Packing Lists (qty x 5/6) are distributed as follows:
 1. Filed in the unit movement plan
 2. Placed on the outside of the shipment unit where it is easily visible/accessible (placed inside a clear plastic sleeve for weatherproofing)
 3. Placed inside the shipment unit (includes sensitive item serial numbers)
 4. Two prepared for the unit's representative (liaison team or supercargo)
 5. One to the ITO for commercial shipments ***

125

Sensitive Items Packing List (Inside Container List)

BOX NO. (a)	CONTENTS - STOCK NUMBER AND NOMENCLATURE	UNIT OF ISSUE (c)	QUANTITIES REQUIRED		
			INITIAL OPERATION (d)	RUNNING SHIFTS (e)	TOTAL (f)
1	NSN 8315-06-123-456 NVG ANPVS 7b Serial Numbers: B1234, B1235, B2345, B3456	EA	4	2	8
2	Paper, Toilet	BX	4	3	12
3	Fluid, Correction	BX	1	2	2

Never place this packing list on the outside of a container. The Sensitive Items Packing List is only placed on the inside of a container

126

Sensitive Items Packing List (Outside Container List)					
BOX NO. (a)	CONTENTS - STOCK NUMBER AND NOMENCLATURE (b)	UNIT OF ISSUE (c)	QUANTITIES REQUIRED		
			INITIAL PACKS (d)	RUNNERS (e)	TOTAL (f)
1	Paper, Toilet	BX	4	3	12
2	Fluid, Correction	BX	1	2	2

Note: No sensitive items listed

Always place a DD Form 1750 on the outside of your container that does not list the sensitive items

127


DD Form 1387

Military Shipment Label

128

DD Form 1387

Military Shipment Label



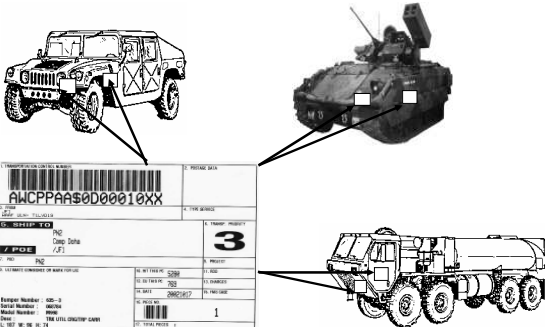
129


MSL Guidelines

- Weigh and measure the dimensions of vehicles/containers and **update DEL/UDL prior to printing MSLs** - information shown on the MSLs must be accurate
- Ensure MSLs can be **easily found** (so that they can be scanned at transit locations)
- Do not mark the barcode for any reason - it will make it unreadable (if the label must be physically marked to show it has been scanned - mark somewhere other than the barcode)
- If the **load of a vehicle/container is changed a new MSL** must be produced
- When attaching MSLs, ensure the surface area where the label will be attached is clean and dry - this allows the adhesive on the label to stick
- Remove MSLs once the deployment is complete**

130

MSL Placement - Vehicles



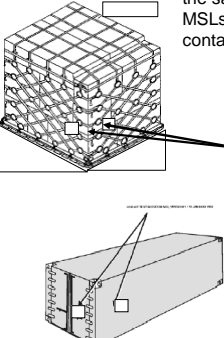



• Attach MSLs to left front bumper (driver's side) and left side door (driver's door)

131

MSL Placement - Pallets/Containers

- Place MSLs on one end and on the adjacent side at the same end of a pallet, and for containers, attach MSLs to the right side door and to the right side of the container as you look at the door





132

DESTINATION PLACARD

- Print on 8.5 x 11 inch paper and place in a clear sealed plastic bag

Unit: 118th INF BN, 2nd BDE, 1ID
 UIC: WTA377
 ULN: CDAAP30
 Destination: Kosovo (Camp Bondsteel)



Unit: A Co., 1-36 INF BN, 1st BDE, 1AD
 UIC: WAE3A0
 ULN: EDAAP15
 Destination: Kuwait (Camp Doha)



Unit: A Co., 1-36 INF BN, 1st BDE, 1AD
 UIC: WAE3A0
 ULN: EDAAC15
 Destination: Kuwait (Camp Doha)



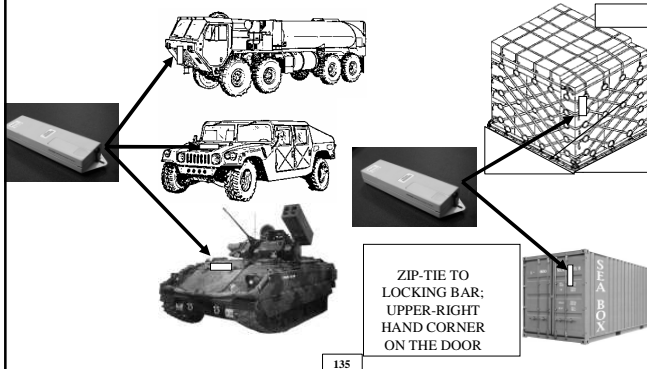
133

Radio Frequency Tags Guidelines

- If Radio Frequency Identification (RFID) tags are being used - the required information must be **entered before departing your home station**
- RFID Tags are mounted (using two long nylon strips - more durable than plastic straps) as follows:
 - **Vehicles:** Attached to the top of the radiator grill (wheeled vehicles)/front of the vehicle (tracked vehicles)
 - **Containers:** Attached to the locking bar located on the door near the upper right-hand corner - you may also use zip ties to attach the RFID tag to containers (do not drill holes in containers to mount the tags)
 - **463L Pallets:** Placed adjacent to the MSL
- Tie down both the top and the bottom of the tag so that it will not bounce and be damaged during shipment
- Note that the data on the RFID tag must be updated if the contents of the vehicle or container are changed

134

RFID Tag Placement



135

Shipping Documents Stowage Location

Wheeled Vehicles: Seal all documents in a clear zip-lock plastic bag and place inside the vehicle on the passenger side's windscreen.



Containers: Seal all documents in a clear zip-lock plastic bag and tape to the outside of the door.

Tracked Vehicles: Seal all documents in a clear zip-lock plastic bag and tape to the outside front driver's side.



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Summary

- Forms:
 - FORSCOM Form 285-R, Vehicle Load Card
 - DD Form 1750, Packing List
 - DA Form 5748-R, Shipment Unit Packing List and Load Diagram
 - DD Form 1387 - Military Shipment Label
 - Destination Placard
 - Radio Frequency Identification Tags
 - Shippers Declaration of Dangerous Goods
 - DD Form 626, Motor Vehicle Inspection (Transporting Hazardous Materials)
 - DD Form 836, Dangerous Goods Shipping Paper / Declaration and Emergency Response Information

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SIGNATURE AND TALLY RECORD

(See DoD 4500.9-R for guidance)

(Use of equivalent carrier-furnished signature and tally record is acceptable.)

Form Approved
OMB No. 0702-0027
Expires Jan 31, 2006

The public reporting burden for this collection of information is estimated to average 3 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0702-0027), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS. RETURN COMPLETED FORM AS DIRECTED IN THE DISTRIBUTION INSTRUCTIONS BELOW.

DISTRIBUTION INSTRUCTIONS

- (1) The SHIPPER will print two copies, retain one copy and give one to the Origin Carrier.
- (2) The ORIGIN CARRIER will deliver one copy with original signatures to the Destination Carrier.
- (3) The DESTINATION CARRIER will attach one copy (reflecting all original signatures) and Standard Form 1113, Public Voucher for Transportation Charges, to the original Government Bill of Lading and forward for payment. Reproduced completed copy of DD Form 1907 will be delivered to the Consignee and one will be retained.
- (4) The CONSIGNEE will ensure Destination Carrier surrenders a reproduced copy of completed form with all signatures.

SECTION I - TO BE COMPLETED BY THE SHIPPER

1a. SHIPPER NAME		b. ORIGIN	
2. PROTECTIVE SERVICE REQUESTED		3. GBL OR CBL NUMBER	
4a. CONSIGNEE NAME		b. DESTINATION	
5. PERMIT NUMBER (If any)		6. TRANSPORTATION CONTROL NUMBER	
7. ROUTING	8. WEIGHT	9. CUBE	
10. SPECIAL INSTRUCTIONS			11. DATE SHIPMENT TENDERED TO CARRIER (YYYYMMDD)
12. NAME OF CARRIER			13. NUMBER OF PIECES
14. TYPE OF PACKAGE(S) (For unsealed loads only) OR CONVEYANCE IDENTIFICATION AND SEAL NUMBERS (For sealed loads only)		15. FREIGHT CLASSIFICATION DESCRIPTION	

**SECTION II - TO BE COMPLETED BY EACH PERSON ACCEPTING CUSTODY OF CLASSIFIED OR PROTECTED MATERIAL
REQUIRING THE USE OF TRANSPORTATION PROTECTIVE SERVICE DURING TRANSIT**

16. CUSTODY RECORD				
PRINT NAME OF PERSON AND COMPANY REPRESENTED a.	STATION INTERCHANGE POINT DESTINATION b.	SIGNATURE OF PERSON ACCEPTING CUSTODY c.	TIME ACCEPTED d.	DATE ACCEPTED (YYYYMMDD) e.

Figure 5-2. Sample Vehicle Load Card

VEHICLE LOAD CARD (TB 55-46-1 & 2) and (FORSCOM Reg 55-1)							
UNIT/JIC		VEH LIN NO		NOMEN/MOD NO		SEC/PLT ASGD	
						SHIPMENT UNIT NO	
						DATE COMPILED	
LENGTH OF VEH		WIDTH OF VEH		HEIGHT OF VEH		VEH EMPTY WT	
OPERATIONAL	REDUCED	OPERATIONAL	REDUCED	OPERATIONAL	REDUCED		
CARGO AREA				CARGO AREA CUBIC FT			
LENGTH	WIDTH	HEIGHT		OPERATIONAL		REDUCED	
NOT COMPUTED FOR HS TO MS				TEST LOAD VERIFIED BY			DATE
CB/CG IS	<div style="border: 1px solid black; width: 50px; height: 20px;"></div>		INCHES FROM	<div style="border: 1px solid black; width: 50px; height: 20px;"></div>			
CARGO COMPARTMENT VIEW							
<div style="position: relative; width: 100%; height: 100%;"> <div style="position: absolute; right: 0; top: 50%; transform: translateY(-50%); transform: rotate(90deg); white-space: nowrap;">FRONT OF VEHICLE</div> </div>							
CARGO LOC NO	CARGO DESCRIPTION & TYPE PACK			NO OF ITEMS	PC CUBIC FT	TOTAL CUBIC FT	PC WT
LOAD PLUS VEHICLE WT					TDA/MTOE PARA AND LIN NO OF DRIVER		

[illegible]

PACKING LIST		PACKED BY Individual Packing the container	1. NO. BOXES One (1) unless consolidated	2a. REQUISITION NO. Vehicle Bumper Number	
3. END ITEM DO NOT USE MISC. TOE EQUIPMENT. Be specific e.g., NBC Defense Equipment			2b. ORDER NO. Shipment Unit Number from AUEL/DEL		
			4. DATE		
			5. PAGE ____ OF ____ PAGES		
BOX NO. (a)	CONTENTS - STOCK NUMBER AND NOMENCLATURE (b)	UNIT OF ISSUE (c)	QUANTITIES REQUIRED		
			INITIAL OPERATION (d)	RUNNING SPARES (e)	TOTAL (f)
1	Line Number (from Property Book) Stock Number Nomenclature BBPCT e.g., Special crating and/or internal packing materials etc., BE SPECIFIC Total Weight----- Description of Container Dimensions	EA N/A	PACKS # in Box N/A	WEIGHT of each items (lbs)	TOTAL WEIGHT (lbs)
6. THIS CERTIFIES THAT ITEMS LISTED HEREON ARE WITHIN THE SPECIFIED BOXES					
TYPED NAME AND TITLE Primary or Alternate UMO			SIGNATURE Primary or Alternate UMO		

DD FORM 1750

Figure 5-3. Packing List, DD Form 1750

PACKING LIST	PACKED BY	1. NO. BOXES	2a. REQUISITION NO.		
			2b. ORDER NO.		
3. END ITEM			4. DATE		
			5. PAGE _____ OF _____ PAGES		
BOX NO. <i>(a)</i>	CONTENTS - STOCK NUMBER AND NOMENCLATURE <i>(b)</i>	UNIT OF ISSUE <i>(c)</i>	QUANTITIES REQUIRED		
			INITIAL OPERATION <i>(d)</i>	RUNNING SPARES <i>(e)</i>	TOTAL <i>(f)</i>
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
6. THIS CERTIFIES THAT THE ITEMS LISTED HEREON ARE WITHIN THE SPECIFIED BOXES					
TYPED NAME AND TITLE			SIGNATURE		

NOTES TO CONSIGNEE

The listing shown on the reverse side, together with pertinent notations relative to each item included, is furnished for your information and guidance only. In the case of lists covering equipment sets, one copy may be retained for reference and used as a supporting document to property books and the other copy retained with the equipment as a component parts listing. For the purpose of clarification, explanations of the various entries on this Packing List are furnished.

ITEM 1. The number of boxes in a set.

ITEMS 2a. & b. The requisition number appearing on the DD Form 1348-1 or order number will be indicated in this entry. The number so referenced should be cited in any correspondence regarding this shipment.

ITEM 3. The stock number, nomenclature, type number (*when available*), and the directive under which the end item was assembled. Not applicable to shipments consisting only of miscellaneous repair parts and accessories for the assembly, set or unit in which case this entry will contain such a notation in lieu of the information cited above (*See 5.3.1.1*).

ITEM 4. Date of preparation.

ITEM 5. Self-explanatory.

Column a. This column will be used when two or more boxes are required for the equipment. It will indicate the number of the container in which the items are packed.

Column b. This space contains a listing of items contained within the box, which are identified by stock number and nomenclature. When an FSN is not

applicable, the manufacturer's code (*See 5.2.2.10*) and part number shall be used.

NOTE: As required, due to out of stock position within the DOD supply system, a component parts shortage which will not hinder operational functions may be waived by higher authority and will be so indicated to the right of the nomenclature. Waivers noted thereon should be requisitioned through normal supply channels.

Column c. Self-explanatory.

Column d. "Initial Operation" - Items which are required for operation of the equipment.

Column e. "Running Spares" - Those items shipped concurrently with the equipment as spare parts and accessories.

NOTE: Columns d and e will be used on an optional basis.

"Total" - Self-explanatory.

ITEM 6. Self-explanatory.

SHIPMENT UNIT PACKING LIST AND LOAD DIAGRAM

A-8. All vehicles, containers, warehouse pallets, 463L pallets, crates, and bundles must display a separate [DD Form 1750/DA Form 5748-R](#) (packing list) showing its complete contents (see [Figure A-4](#)). Packing lists are not required for items that do not need identification, such as empty vehicles, nested cans, or banded shovels. However, these items must be listed on the load diagram if they are loaded in a truck or container. A packing list is not always required for a container if it already has a list of its complete contents on it. An example is an inventory of tools or a parts list such as those found in supply bulletins. Do not list classified materiel on the packing lists. Personnel will prepare five copies of the packing list for distribution. Distribute copies as follows:

- One copy is filed in the movement plan.
- One copy is put on the outside of the shipment unit where it is easily visible or accessible. (This copy is put inside a weatherproof covering.)
- One copy is put inside the shipment unit.
- One copy is prepared for the unit's representative (liaison team or supercargo).
- One copy is retained by the hand receipt holder.

The DA form should be prepared according to the following instructions:

Block 1. Enter the name of deploying unit.

Block 2. Enter the UIC or bumper number.

Block 3. Enter the TCN or container seal number.

Block 4. Enter a general shipment unit description and use phrases such as "NBC defense equipment," "motor maintenance spare parts," or "office supplies." (Do not use terms such as "MISC.") Include LIN and applicable index number.

Block 5. Enter the date the form is compiled/date packed.

Block 6. Enter length of shipment unit.

Block 7. Enter width of shipment unit.

Block 8. Enter height of shipment unit.

Block 9. Enter cubic feet of shipment unit.

Block 10. Vehicle/shipping containers enter empty weight.

Block 11. Vehicle/shipping containers enter loaded weight.

Block 12. Enter location of center of balance.

Column 13a. Enter cargo location number (See note at [Block 15](#).)

Column (a). Number contents sequentially. Use this same number to identify the cargo compartment view shown on the load diagram.

Column (b). Enter nomenclature of contents and line number from property book. Highlight all HAZMATs.

Column (c). Enter the type of package. Accepted abbreviations include:

Battery	btry
Cylinder	cyl
Piece	PC
Palletized	PT

Column (d). Enter unit of issue such as "1 ea."

Column (e). For hazardous packages only: Enter the weight of each package separately. Then enter the total package weight (weight, volume, or otherwise appropriate measurement).

Column for non-HAZMATs. Enter total package weight.

NOTE: The bottom of the last page must contain the following information:

1. BBPCT information. For example, special crating and/or internal packing materials (be specific).
2. Total weight in pounds.
3. Statement: "This is to certify the above named materials are properly classified, described, packaged, marked, and labeled and are in the proper condition for transportation according to the applicable regulations of the Department of Transportation."

Blocks 14a, Enter the name, grade, title, signature of person preparing the form and date in Block e. If [Block 13b](#) includes hazardous cargo, then the unit's hazardous cargo certifying official will sign under the hazardous cargo statement.

Block 15. A load diagram is shown for all items that require a packing list. The load diagram must show the following:

- a. A diagram of the location of each item loaded.
- b. A brief description of the load, including potential loading problems and instructions.
- c. The type of container or vehicle.
- d. All blocking, bracing, and packing materials needed to secure the cargo within the shipment unit.

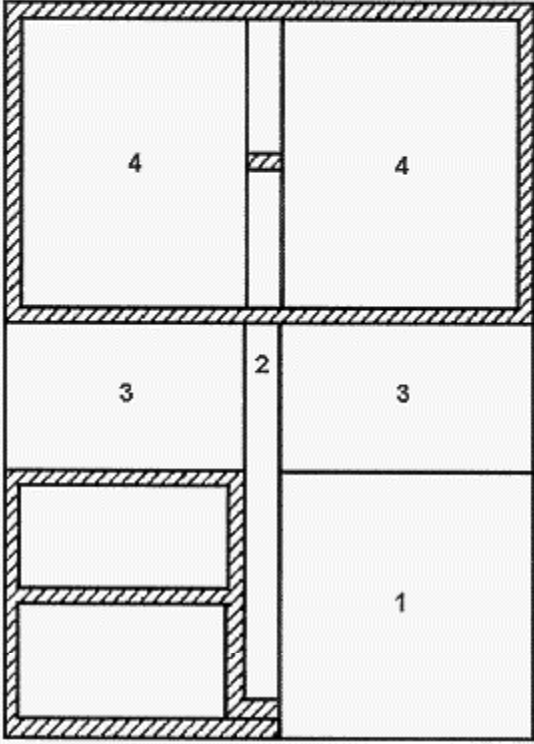
Block 16. Remarks. Self-explanatory.

SHIPMENT UNIT PACKING LIST AND LOAD DIAGRAM				PAGE	
For use of this form, see FM 55-65, the proponent agency is TRADOC.				OF	
1 DEPLOYING UNIT A Co. 1-10 IN WABCA		2 UIC OR BUMPER NO A-41		3 TCN OR SEAL NUMBER AWABCA000D12340XX	
4 SHIPMENT UNIT DESCRIPTION M523A2, TRK, CGO 5TON XM0794.36				5 DATE PACKED	
6 LENGTH 311	7 WIDTH 90	8 HEIGHT 121	12 LOCATION OF CG		
9 CUBE 2135	10 EMPTY WEIGHT 20930	11 LOADED WEIGHT 27904			
13. PACKING LIST					
CARGO LOC NO <i>a</i>	CONTENTS (Description and Nomenclature) <i>b</i>	TYPE PKG. <i>c</i>	PKG. QTY. <i>d</i>	PKG. WEIGHT <i>e</i>	TOTAL PKG WEIGHT
1	TENT, GP MED	PLT	1	250	250
2	POLES & MISC EQUIPMENT	BX	1	50	50
3	LIGHT SET, ILLUM	BX	2	50	100
4	GEN SET, 3KW	3EA	2	3162	6324
BBM	120 ft 4 X 4 100 ft 2 X 4 7 lb 2 X 4 4 CGU-1 CGO Straps				250
14. CERTIFICATION. This certifies that items listed hereon are contained within the specified packages.					
<i>a</i> TYPED NAME SMITH, JOHN A.		<i>b</i> GRADE SGT	TITLE SQUAD LEADER		
<i>d</i> SIGNATURE				DATE	
DA FORM 5748-R, MAR 89					

Figure A-4. Sample DA Form 5748-R (Front)

15. LOAD DIAGRAM (Sketch cargo storage in space below).

FRONT



16 REMARKS

Tent is banded to warehouse pallet
Poles are banded together
Generator sets have been drained and cleaned

REVERSE OF DA FORM 5748-R, MAR 89

Figure A-4. Sample DA Form 5748-R (Back)

Info obtained from FM 55-65

SHIPMENT UNIT PACKING LIST AND LOAD DIAGRAM For use of this form, see FM 55-65; the proponent agency is TRADOC			PAGE OF	
1. DEPLOYING UNIT		2. UIC OR BUMPER NO.	3. TCN OR SEAL NUMBER	
4. SHIPMENT UNIT DESCRIPTION			5. DATE PACKED	
6. LENGTH	7. WIDTH	8. HEIGHT	12. LOCATION OF CG	
9. CUBE	10. EMPTY WEIGHT	11. LOADED WEIGHT		

13. PACKING LIST

CARGO LOC. NO. <i>a</i>	CONTENTS (Description and Nomenclature) <i>b</i>	TYPE PKG. <i>c</i>	PKG. QTY. <i>d</i>	PKG. WEIGHT. <i>e</i>	TOTAL PKG. WEIGHT. <i>f</i>

14. CERTIFICATION. *This certifies that items listed hereon are contained within the specified packages.*

a. TYPED NAME		b. GRADE	c. TITLE	
d. SIGNATURE				e. DATE

15. LOAD DIAGRAM *(Sketch cargo storage in space below)*

16. REMARKS

1. TRANSPORTATION CONTROL NUMBER  AWCL6AA\$0F00050XX		2. POSTAGE DATA	
3. FROM WCL6AA 0073 TC CO. FLOATING CRAFT FORT EUSTIS, VA.		4. TYPE SERVICE	
5. SHIP TO POE TRANS. OFFICER 1608 PATCH ROAD ATTN: ATZF-NT FORT EUSTIS VA 23604-5300		6. TRANSP. PRIORITY	
7. POD		8. PROJECT	
9. ULTIMATE CONSIGNEE OR MARK FOR UIC: WCL6AA Bumper Number: 33L Serial Number: GR-WCL6AA-F0005 Model: MCS Desc: 40 FT SECTION L: 48L ; W: 97 ; H: 56		10. WT THIS PC 22500	11. RDD
		12. CU THIS PC 1513	13. CHARGES
		14. DATE	15. FMS CASE
		16. PIECE NO  1	
		17. TOTAL PIECES OF 1	

FORM APPROVED ONE NO 8704-0158

3. FROM VWVV VWVV		9. ULTIMATE CONSIGNEE OR MARK FOR WAD1A0 DODAAG 	
1. TRANSPORTATION CONTROL NUMBER AWAD1A0\$0D00020XX 			
16. PIECES 1 of 1 	5. SHIP TO/POE nnnnnn nnnnnn /		6. TRANSP PRIORITY 4
8. PROJECT	14. DATE SHPD 20031015	11. RDD	7. POD
10. WT/CU THIS PC 40940/1817	4. TYPE SERVICE	13. ULN	15. UIC WAD1A0
19. NSN 2350010485920	20. NOM INFANT	21. COMM	22. SERIAL NUMBER 22
18. EDI 888 			2. POSTAGE DATA/TAC BUMPER NUMBER TNG 2

CONUS HIGHWAY OPERATIONS



UMODB01

1

CONUS HWY OPERATIONS

REFERENCES

- FM 4-01.011 'Unit Movement Operations'
 - Chapter 3 and Appendix C
 - Defines convoys, convoy organization, convoy identification
- FM 55-30 "Army Motor Transport Units and Operations":
 - Chapter 5 and Appendices E and M
 - Convoy control, organization and planning, American Trucking Association Summary of Size and Weight Limits, mobilization movement control
- FORSCOM/ARNG Reg 55-1
 - Chapter 7
 - Convoy operations and movement control in CONUS



2

CONUS HWY OPERATIONS

SCOPE OF LESSON

- Convoy Request and Approval Process
- Convoy Procedures



3



CONVOY REQUEST AND APPROVAL PROCESS

4

CONUS HWY OPERATIONS

FACILITATING AGENCIES

State Department of Transportation:

- Set limits and restrictions for each state concerning vehicle weight, length, width and height to ensure the safety of other highway users and to preclude damage to highways (also bridges, tunnels etc)
- DOD policy states that vehicle movement that exceeds legal limitations or regulations, or that subjects highway users to unusual hazards (eg, ammunition transportation), WILL NOT be made without the permission from regulating state or local or authorities
- If necessary use other modes (eg, rail) or commercial transporters for over-dimensional/over-weight loads)

5

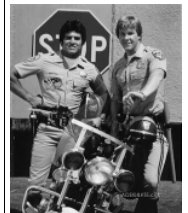
Ref: FM 4-01.011, p.C-1

CONUS HWY OPERATIONS

FACILITATING AGENCIES (Cont)

Civilian and Military Police:

- Coordinated by the UMC
- Assist at:
 - major intersections
 - entrances/exits to interstates, highways etc
 - densely populated and industrial areas
 - entrances/exits to rest areas (halts)



6

Ref: FM 4-01.011, p.C-9

CONUS HWY OPERATIONS

FACILITATING AGENCIES (Cont)

Military Surface Deployment and Distribution Command (SDDC)

- Commander SDDC is the designated DOD executive agent in public highway matters
- Coordinates highway policy & related matters between military & civilian authorities
- Takes action to resolve denial of permits

7

Ref: FM 4-01.011, p.C-9

CONUS HWY OPERATIONS

STATE MOVEMENT CONTROL CENTER (SMCC)

- Located **within** the **Joint Forces Headquarters-State (JFHQ-ST)** in each state and headed up by the **Defense Movement Coordinator (DMC)**
- **Processes** convoy requests
- **Deconflicts** all AC/ARNG/AR convoys using MOBCON (Mobilization Movement Control - computer system used to centrally control convoy movements, and create CCN's)
- Provides **interface** between military and civilian (DOT) agencies that control the use of highways, tunnels, & bridges for the coordination of convoy movements

8

Ref: FM 55-30, Appendix M-2

CONUS HWY OPERATIONS

STATE MOVEMENT CONTROL CENTER (SMCC) (Cont)

- **Coordinates** all **AC/ARNG/AR convoys** that originate within their states
 - **Receives DD Form 1265** (Request for Convoy Clearance) and sends back a Convoy Movement Order (CMO)
 - **Receives DD Form 1266** (Special Handling Permit), sends to appropriate civil agencies and then **sends back** the appropriate **Special Hauling Permits** (permit allowing the movement of over-dimensional/over-weight vehicles on public roads)

Ref: FM 55-30, Appendix M-2 and FM 4-01.011, p.3-2

9

CONUS HWY OPERATIONS

UNIT MOVEMENT COORDINATOR (UMC)

- **Receives request** for convoy clearances and special hauling permits from the unit and staffs them to the SMCC
- Coordinates **installation support** for convoys
- May approve **local convoy requests** for prearranged short routes commonly traveled in the local area (only with the concurrence of the DMC)
- Local CCN's created by the UMC are done manually or through TC ACCIS / TC AIMS II

Ref: FM 55-30, Appendix M-2 and FM 4-01.011, p.3-2

10

CONUS HWY OPERATIONS

REQUEST PROCESS

Active Component:

- UMO submits **DD Form 1265 (Request for Convoy Clearance)** and **DD Form 1266 (Request for Special Handling Permit)** to the Installation Transportation Office (ITO)
- **Within ITO request staffed by Unit Movement Coordinator (UMC). After request validated passed to State Movement Control Center (SMCC)**
- **Requests must be submitted by the UMC to the SMCC 10 days prior to convoy movement during peacetime)**

11

Ref: FORSCOM/ARNG 55-1, p.48

CONUS HWY OPERATIONS

REQUEST PROCESS (Cont)

United States Army Reserve:

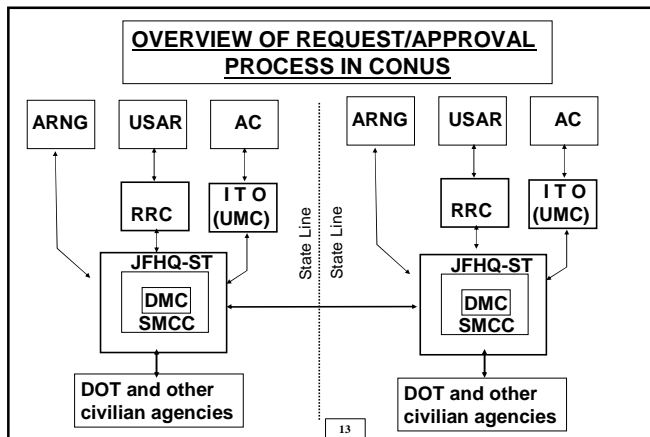
- **Units staff requests (DD Forms 1265 and 1266)** through their Regional Readiness Command (RRC)
- **After request validated** passed to the **appropriate SMCC**
- **Requests are to arrive at the SMCC 45 days prior to convoy movement during peacetime**

Army National Guard:

- **Unit staff requests (DD Forms 1265 and 1266) directly to the SMCC**
- **Requests are to arrive at the SMCC 45 days prior to convoy movement during peacetime)**

12

Ref: FORSCOM/ARNG 55-1, p.48



CONUS HWY OPERATIONS

CONVOY MOVEMENT ORDER (CMO)

- Returned to unit from the SMCC through the UMC
- Consists of:
 - Convoy details (Paragraph 1)
 - Specific route and time schedule (Paragraph 2)
 - En route reporting requirements (if any) (Paragraph 3)
 - Remarks (Paragraph 4)
- Routing and times requested on DD Form 1265 may differ to that detailed on the CMO - so check to ensure the CMO meets mission requirements
- CMO is **valid only for the route and time designated** (deviations must be authorized by DMC). May be a ten minute gap between convoys so meeting the CMO timings is critical

Ref: FM 55-30, Appendix M-3/4

CONUS HWY OPERATIONS

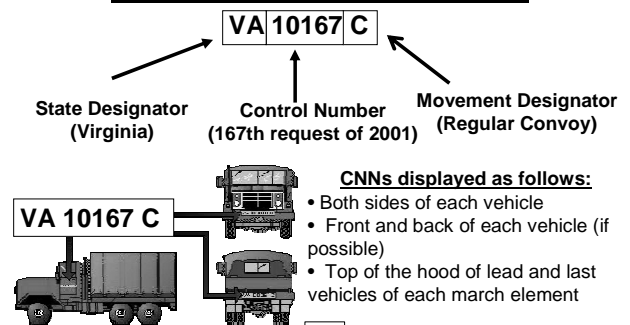
CONVOY MOVEMENT ORDER (CMO) (Cont)

- Contains the **Convoy Clearance Number** (eight characters): identifies the convoy for its entire movement (even if it crosses state lines)
 - Two letter abbreviation of the issuing state (eg VA for Virginia)
 - Five Digit Control Number: First digit represents the year, next four digits represents the numerical sequence of CMOs processed by the SMCC for that year
 - A one letter type of movement designer
 - 'S' = outsize/overweight vehicles
 - 'E' = explosives
 - 'H' = hazardous cargoes
 - 'C' = all other convoys

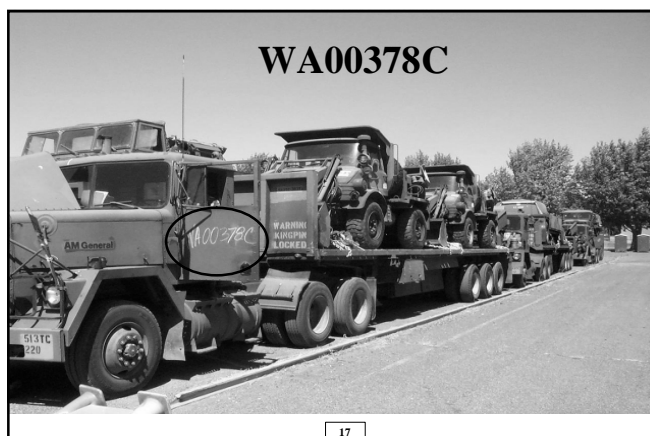
Ref: FM 55-30, Appendix M-3

CONUS HWY OPERATIONS

CONVOY CLEARANCE NUMBERS



Ref: FM 4-01.011, p.C-10



CONUS HWY OPERATIONS

MANUALLY PREPARED CCNS

- For **AC units**, the ITO/UMC may provide, with prior coordination with the DMC, a CCN. This number is comprised of **10 digits & 4 sections**:
 - A **2-letter location** (post or state) identifier (where convoy originates)
 - A **4-digit Julian date**
 - A **3-digit sequence number**
 - A **one letter type** movement designer
- These CCN's are created either manually or through TC ACCIS / TC AIMS II

FE 0059 039 C

Ref: FM 4-01.011, p.C-11

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CONUS HWY OPERATIONS

MANUALLY PREPARED CCNS (CONT)

- Example:

The 39th local convoy originating at Ft Eustis in Virginia on 28 February 2000 will be assigned convoy number:

FE 0059 039 C

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CONUS HWY OPERATIONS

SUMMARY

- Facilitating Agencies
- Request Process for DD Forms 1265 and 1266
- Convoy Movement Orders (CMO)
- Convoy Clearance Numbers (CCN)

20



CONVOY PROCEDURES

CONUS HWY OPERATIONS

CONVOY PLANNING

- Convoy planning of a unit's personnel, supplies, and equipment rests with you



- There are many considerations that impact convoy planning and preparation

22

CONUS HWY OPERATIONS

MOTOR CONVOY DEFINITION

- **Group of military vehicles** organized for the purpose of **control** and **orderly movement**. Defined as:

- Any **group of six (6) or more** vehicles proceeding together under the control of a single commander
- **10 or more vehicles per hour** dispatched to the same destination using the same route
- Any **one vehicle** that requires a **Special Hauling Permit** (DD Form 1266)

23

Ref: FM 4-01.011, p.C-1

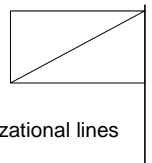
CONUS HWY OPERATIONS

CONVOY ORGANIZATIONAL ELEMENTS

- A convoy commander can better control a convoy if it is **broken down into smaller, more manageable groups**. Convoys consist of **3 organizational elements**:

1. **March Column** / Convoy Commander
2. **Serial** / Serial Commander
3. **March Unit** / March Unit Commander

- If possible, convoys are organized along organizational lines (battalion, company, platoon)



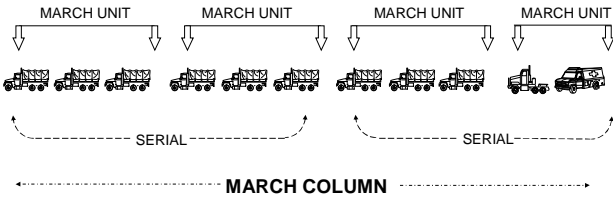
24

Ref: FM 4-01.011, p.C-6

CONUS HWY OPERATIONS

CONVOY ORGANIZATIONAL ELEMENTS (CONT)

(usually ≤ 20 vehs)

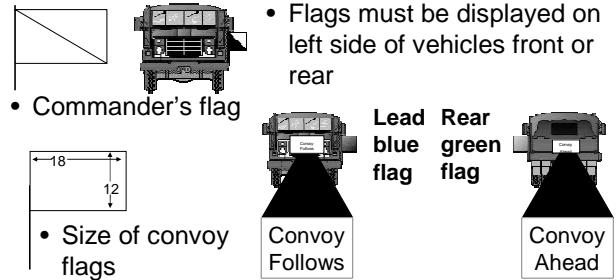


25

Ref: FM 4-01.0.11, pp.C-6/7

CONUS HWY OPERATIONS

CONVOY IDENTIFIERS



26

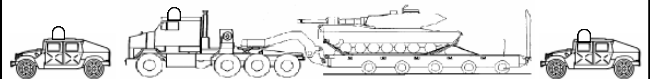


27

CONUS HWY OPERATIONS

CONVOY IDENTIFIERS (CONT)

- Rotating amber warning light placed on oversize or overweight vehicles **and the first and last** vehicles (usually the escort vehicles) in their march element

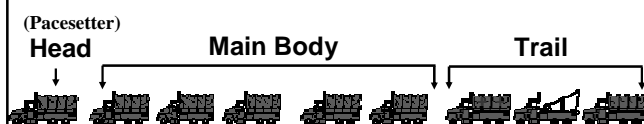


28

Ref: FM 4-01.0.11, pp.C-12

CONUS HWY OPERATIONS

THREE FUNCTIONAL ELEMENTS OF A CONVOY



29

CONUS HWY OPERATIONS

HEAD

- The head is the **first vehicle** of each column, serial or march unit - **normally slowest/heaviest** vehicle (excluding oversize/overweight vehicles)
- The head carries the '**Pacesetter**', who is responsible for:
 - Maintaining the rate of march set by the convoy commander (eg 45 mph)
 - Meeting set times at SP, RP and all CPs
 - Keeping the convoy on the proper route
 - Informing the convoy commander of any obstacles or hazards that may cause a deviation from the set route (such as road construction etc)

30

Ref: FM 4-01.0.11, pp.C-8

CONUS HWY OPERATIONS

MAIN BODY

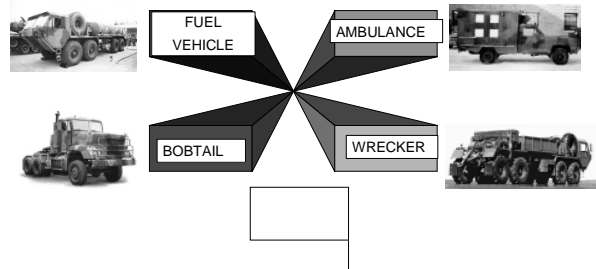
- Largest part of convoy
- Follows pacesetter
- Typically divided into serials & march units (each with own pacesetter) for easier control & management



31

CONUS HWY OPERATIONS

TRAIL VEHICLES CONSIST OF THE FOLLOWING:



32

Ref: FM 4-01.011, p.C-7

CONUS HWY OPERATIONS

TRAIL OFFICER

- At rear of march element
- Responsible for:
 - Checks and observes vehicles at SP
 - Keeps **convoy commander** informed of status of vehicles that fall out of the convoy (stragglers)
 - Oversees all maintenance, recovery, accident investigation, medical aid, and disposition of disabled equipment
 - Picks up guides (used in areas where road signs are poor or non-existent) and markers left by preceding march elements

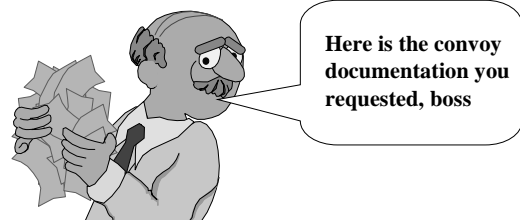


33

Ref: FM 4-01.0.11, pp.C-8/9

CONUS HWY OPERATIONS

CONVOY DOCUMENTATION



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CONUS HWY OPERATIONS

DD Form 1265 - Request for Convoy Clearance

The form is divided into two sections: Front and Back. The Front section contains fields for Requesting Activity, Convoy Number, Date, and other details. The Back section contains a large area for additional information and a section for the Approving Authority.

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CONUS HWY OPERATIONS

DD Form 1266 - Request for Special Hauling Permit

The form is divided into two sections: Front and Back. The Front section contains fields for Requesting Activity, Convoy Number, Date, and other details. The Back section contains a large area for additional information and a section for the Approving Authority.

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CONUS HWY OPERATIONS

DD Form 626: Motor Vehicle Inspection (Transporting Hazardous Materials)

- Vehicles must be inspected, deficiencies corrected & DD Form 626 completed **before** hazardous material is loaded

37

DD Form 836 Dangerous Goods Shipping Paper/Declaration and Emergency Response Information for Hazardous Materials Transported by Government Vehicles/Containers or Vessel

38

CONUS HWY OPERATIONS

FORSCOM Form 285-R: Vehicle Load Card

39

CONUS HWY OPERATIONS

DA Form 5748-R Shipment Unit Packing List and Load Diagram

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CONUS HWY OPERATIONS

LOGISTICS REQUIREMENTS

- Command Responsibility
- All logistical requirements should be **arranged prior to convoy movement** (see Convoy Commander's Checklist at pp.C-17/19), and could include:
 - Maintenance
 - Billeting
 - Escorts
 - Medical
 - Refueling (limitations of equipment)

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Ref: FM 4-01.0.11, pp.C-17/19

CONUS HWY OPERATIONS

COMMUNICATIONS

- Radio** principal means (consider placement, distance, orders)
- Visual** Communication: Hand and arm signals, flags, headlights, message boards
- Audio** Signals: Horns, whistles, loudspeakers



42

Ref: FM 4-01.011, p.C-9/10

CONUS HWY OPERATIONS

SAFETY

- Safety concerns:
 - Drivers and leaders **obey signals** and orders
 - Proper safety **awareness** and enforcement
 - Vehicles **maintain pace**
 - Proper **interval** maintained ('4 second rule')



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CONUS HWY OPERATIONS

SAFETY (CONT)

- **Headlights** of all vehicles on **low beam** at all times (including when halted on road shoulders)
- When halted on road shoulders, vehicles equipped with **emergency flasher** systems must also have these lights operating
- When moving **at night** or during periods of reduced visibility, lead, trail, and oversize/overweight vehicles will operate hazard lights



Ref: FM 4-01.011, p.C-13

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CONUS HWY OPERATIONS

SAFETY (CONT)

Each vehicle **must have**:

- A fire extinguisher suitable for a petroleum fire
- A first aid kit
- A set of tire chains (when snow or ice conditions may be encountered)
- A highway warning kit

Ref: FM 4-01.011, p.C-13

45

CONUS HWY OPERATIONS

CONVOY CONTROL MEASURES

SPEED

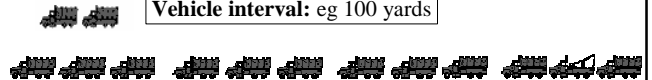


Convoy Speed: eg 45 mph

Catchup Speed: eg 50 mph

SPACING

Vehicle interval: eg 100 yards



Time gap between march elements: eg 10 mins

46

CONUS HWY OPERATIONS

Which convoy is correctly spaced?



47



48



49

CONVOY FORMATIONS

Close Column

- Vehicle intervals: 25 - 50 meters
- Speed: < 25mph
- Greatest degree of control
- Used in limited visibility, or on poorly marked or congested roads

Open Column

- Vehicle intervals: 100 meters +
- Speed: > 25mph
- Preferred formation
- Used on well marked open roads with good visibility

Both are correctly spaced!



Infiltration: No defined structure, variable intervals and speed. Not normally used except as last resort in extremely congested areas or when the mission dictates

50

Ref: FM 4-01.011, p.C-8

CONVOY ROUTE PLANNING



51

CONUS HWY OPERATIONS

ROUTE RECONNAISSANCE

- Not limited to tactical operations
 - Must be done prior to any convoy movement
 - Type of reconnaissance dependent on time and resources available
- **Three types:**
 - Map reconnaissance
 - Ground reconnaissance
 - Air reconnaissance
- Permanent Reconnaissance Record (conducted by qualified personnel) may be available from the ITO for commonly traveled routes



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CONUS HWY OPERATIONS

MAP RECONNAISSANCE

- Should always be **conducted prior** to a highway movement
- Much information can be obtained from maps including:
 - Road surface type
 - Type of terrain
 - Obstacles
 - Critical points
 - Distances



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CONUS HWY OPERATIONS

GROUND RECONNAISSANCE

- Should be conducted as soon as map reconnaissance is complete
- Most effective type of reconnaissance
- Provides 'real' information



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CONUS HWY OPERATIONS

AERIAL RECONNAISSANCE

- Utilized when ground reconnaissance is not possible or for a last minute look at the route
- Provides excellent overview of surface route
- Limited route data

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CONUS HWY OPERATIONS

START POINT (SP)

- Convoy commander assumes active control of march column at the start point (SP)
- Convoy passes start point at established rate of march and vehicle interval.
- Start point should be a point on the route that is easily recognizable on both a map and the ground

56

Ref: FM 4-01.011, p.C-5

CONUS HWY OPERATIONS

RELEASE POINT (RP)

- Released from active control of convoy commander (set rate of march and vehicle interval) after passing through the RP
- A common point from which the vehicles in a march column with different destinations can be released to continue their assignments
- Unit guides meet their units at the RP & lead them to their designated area
- The RP should be easily recognizable on both a map and the ground

57

Ref: FM 4-01.011, p.C-5

CONUS HWY OPERATIONS

CHECKPOINTS (CP)

- Designated checkpoints (CP) along the route are an effective method of convoy control
- Checkpoints should be easily recognizable features and are numbered sequentially
- Checkpoints should correspond to checkpoints on strip map given to each driver
- Checkpoints are used to report the convoy location to command & control headquarters

58

Ref: FM 4-01.011, p.C-5

CONUS HWY OPERATIONS

CRITICAL POINTS

- Critical points that may **slow convoy progress** should be considered by the convoy commander. They include:
 - Toll roads
 - Bridges
 - Overpasses / Underpasses
 - Constrictions
 - Sharp turns



59

Ref: FM 4-01.011, p.C-5

CONUS HWY OPERATIONS

HALTS

- Halt locations should be selected in advance
- Used for rest, refueling, mess and maintenance
- Rest halts scheduled for 15 minutes end of the first hour & 10 minutes every two hours thereafter
- Key points for rest halts:
 - Check on loads during rest halts
 - Refuel at meal halts if necessary

60

Ref: FM 4-01.011, pp.C-14/15

CONUS HWY OPERATIONS

ROUTE CONSIDERATIONS

- An alternate route **should be identified**
- Location of medical facilities & telephones **should be noted**

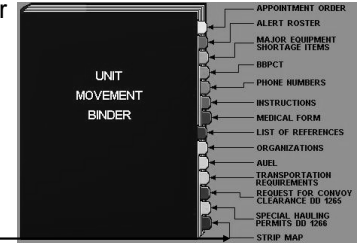


61

CONUS HWY OPERATIONS

STRIP MAPS

- Strip maps are issued to each driver & other key personnel involved with the convoy
- Strip maps can be included as an appendix to the unit movement plan



62

CONUS HWY OPERATIONS

STRIP MAP PREPARATION

- A strip map is a graphic representation of the route the convoy will travel
- The strip map need not be drawn to scale, but **must include the following elements**:
 - Start point
 - Release point
 - Rest/halt areas
 - Routes
 - Major cities & towns
 - Critical points & check points
 - Distance between checkpoints
 - North orientation

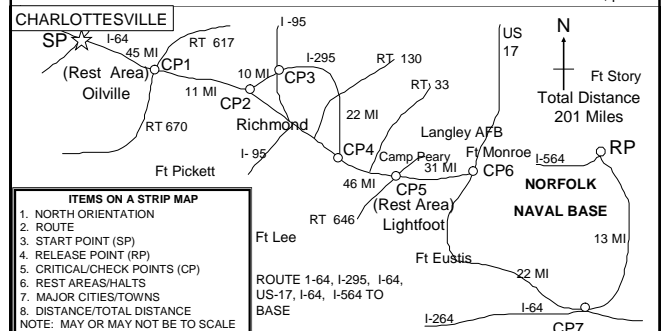
63

Ref: FM 4-01.011, p.C-6

GRAPHIC STRIP MAP

(Not to Scale)

Ref: FM 4-01.011, p.C-6



CONVOY ACTIVITIES



65

CONUS HWY OPERATIONS

UNIT MOTOR POOL

- Unit should complete as many preparations as possible at motor pool area
 - Check convoy documentation
 - Check radios and frequencies
 - Check vehicle maintenance
 - Check secondary loads
 - Check protective covers & lashing



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CONUS HWY OPERATIONS

INSTALLATION STAGING AREA (ISA)

- Many installations provide a large area for convoy staging
- Where the deploying unit's equipment is inspected after it has departed their unit's motor pool
- Vehicles staged in convoy order
- Where final preparation and external checks are conducted

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CONUS HWY OPERATIONS

ISA PRE-MOVEMENT COORDINATION

- UMC or Deployment Support Brigade personnel inspect the following:
 - Secondary loads for stowage, bracing, covers & lashing
 - Safety equipment and Basic Issue Items present
 - Vehicle weight
 - Fuel levels
 - Maintenance, tires, fluids & leaks
 - HAZMAT stowage & documentation
 - Documentation & vehicle marking

68

Ref: FM 4-01.011, p.C-13

CONUS HWY OPERATIONS

DRIVER PREPARATION

Checked for:

- Driver and assistant driver have a valid operators license and required endorsement if carrying HAZMAT
- Have enough experience to operate vehicle safely on public highways
- Aware of route and convoy speed/spacing
- **8 hours of rest within the 12 hours before** the convoy departs



69

Ref: FM 4-01.011, p.C-13

CONUS HWY OPERATIONS

CONVOY COMMANDER'S BRIEFING

- Convoy organization and vehicle assignments
- Control measures (timings/speeds/spacing etc) and actions on (breakdown, separated from convoy etc)
- Distribute strip map
- See check list on page C-13/14 and sample briefing on page C-20/21

70

Ref: FM 4-01.011, p.C-13/14, 20/21

CONUS HWY OPERATIONS

ACCIDENTS!

Fatal accident when load was too high



Ref: FM 4-01.011, p.C-15

- Minimize effects and keep convoy moving
- Only vehicle immediately behind should stop and render assistance
- First aid
- Report accident to civilian police - do not move damaged vehicle until civil police investigation completed
- Recover vehicle if required
- Complete accident report forms

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CONUS HWY OPERATIONS

ENROUTE REPORTING

- During peacetime, convoys will not normally be required to report movement progress
- During mobilization and for selected exercises, special instructions incorporated into the CMO will direct the convoy commander to report to the appropriate SMCC upon departure, at selected locations enroute, and upon arrival
- Primary means of enroute reporting will be via commercial telephone (toll free or collect)



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Ref: FORSCOM/ARNG 55-1, p.55

FORM MP-51, DMV99 (BR030612897)

REPRODUCTION NOT VALID

GENERAL BLANKET PERMIT

ITEM TRANSPORTED SHALL BE IRREDUCIBLE OR REDUCED TO SMALLEST DIMENSIONS POSSIBLE. PERMITEE IS HELD TO ALL TERMS, CONDITIONS AND RESTRICTIONS ATTACHED AND WRITTEN BELOW. PERMIT ISSUED PURSUANT TO SECTIONS 46.2-1139; 33.1-12(3) ; 46.2-652 (TEMPORARY REGIST. OF HEAVY EQUIPMENT) AND 46.2-653 (TEMPORARY REGIST. OF MOBILE HOMES AND HOUSE TRAILERS EXCEEDING LEGAL LIMITS) OF THE CODE OF VA AND THE HAULING PERMIT MANUAL. VDOT CONTACT NUMBER (804) 786-3495.

PERMITEE

1. ITO FT.EUSTIS / DOL, UMB

PERMIT NO: BR030612897

BLDG # 809 AFFG-Z-551

FT. EUSTIS, VA 23604

VOICE PHONE: (804) 292-8568

FEDERAL ID NO: US GOVT

TRANS. CO: US GOVT

EFFECTIVE DATE: 03/06/2001

EXPIRATION DATE: 03/06/2002

FEE: VDOT FREE DMV *N/A*

REQUESTED VIA: FAX

AUTHORIZED BY: LYNN D. WAGNER
State Permit Manager

3. ITEM TO BE MOVED: EMPTY OVERSIZE TRAILER
HAUL / DRIVE / TOW: TOW

ROUTING

ROUTES: TRAVEL PERMITTED UPON ALL UNRESTRICTED ROUTES IN VIRGINIA.
NO TRAVEL PERMITTED ACROSS BRIDGES / STRUCTURES IDENTIFIED IN
ATTACHMENT. NO TRAVEL PERMITTED ACROSS BRIDGES / STRUCTURES
POSTED FOR WEIGHT LESS THAN WEIGHT OF VEHICLE CONFIGURATION.

PERMIT NOT VALID ON ROUTE 17, IN FAQUIER COUNTY BETWEEN
INTERSTATE 66 AND ROUTE 50.

VEHICLE

7. VEHICLE MAKE AND MODEL: *N/A*
TRAILER LIC. / SRNO. : US GOVT

OVERALL SIZE AUTHORIZATION

10. HEIGHT: * N/A *WIDTH: * 12 FT 0 IN* LENGTH: * 71 FT 2 IN*

FRONT OVERHANG: * N/A *REAR OVERHANG: * N/A *

WEIGHT AUTHORIZATION

13. GROSS WT. OF VEHICLE OR VEHICLE COMBINATION NOT TO EXCEED (LBS) : *91,400*
AXLE LOADINGS NOT TO EXCEED THE FOLLOWING:

SINGLE AXLE	(LBS) :	* 24,000*
TANDEM AXLE	(LBS):	* 44,000*
TRI AXLE	(LBS):	*54,500*
QUAD AXLE	(LBS):	*64,000*
OTHER AXLE	(LBS):	* N/A *

PW010401
UIC: WCKYAA

ROUTINE
20010307

CONVOY MOVEMENT ORDER VA10167C AS OF: 20010307

FM VA SMC

LTC GLENN 'H BOLLING

VOICE DSN: 4388563 COMM: (804) 2928563

FAX: DSN: 4388606 COMM: (804) 2928606

BLDG 307 FT PICKETT

BLACKSTONE VA 238246316

TO COMMANDER

HHC 10TH TC BN (TERM)

VOICE DSN: _____ - _____ COMM: (____) _____ - _____

FAX DSN: _____ - _____ COMM: (____) _____ - _____

BLDG 820, AFFG-J-HHC

FT EUSTIS VA 23604-5285

UNCLAS

SUBJECT: CONVOY MOVEMENT ORDER NUMBER VA10167C

1. YOUR REQUEST FOR ROAD MOVEMENT IS APPROVED AS FOLLOW

A. ORIGIN: NODE: 5100835 FT Eustis: Gate
B. DEPARTURE: 0605 2001036
C. DESTINATION: NODE# 5100025 Norfolk: Naval Base
D. ARRIVAL: 0652 2001036
E. CONVOY CMDR: CPT SANDERS
F. LENGTH OF CONVOY: 003 MINUTES
G. AVERAGE SPEED: 40
H. NUMBER OF VEHICLES 017
I. MARCH UNITS: 001
J. M/U INTERVAL: 000
K. CARGO:
MTOE AND CTA EQUIPMENT ADN PERSONNEL
L. OS/OW VEHICLES: 000
M. CIVIL PERMITS: N

2. YOU ARE DIRECTED TO MOVE IAW THE MOVEMENT TABLE BELOW:

NODE #	DESCRIPTION	INTERSECTION	LEAD	CLEAR	DATE	HALT			
						HR	MIN	MI	MPH
5100835	VA FT Eustis: Gate	S105	0605	0608	20010326	0	0	1	40
5100596	VA I64 X250	I64 S105	0607	0610	20010326	0	0	27	40
5101007	VA I64 X276	I564 I64	0647	0650	20010326	0	0	3	40
5100025	VA NORFOLK: Naval	I564 V?NOR	0652	0655	20010326	0	0	31	

3. EN ROUTE REPORTING REQUIREMENTS:
CALL: (804) 292-8568 FOR CHANGE IN CMO

4. REMARKS:
(1) CMO IN EFFECT. (2) ROUTING ON THIS CMO MUST BE FOLLOWED. (3)
OXYGEN AND ACETYLENE BOTTLES MUST BE MOUNTED IN PERMANENT RACKS ON THE
VEHICLE IN THE UPRIGHT POSITION. CAGES FOR THE BOTTLE MUST BE REMOVED
AND METAL SCREW ON CAPS MUST BE INSTALLED OVER VALVE ASSY. (4)
VEHICLE WITH HAZMAT MUST STOP AT INSPECTION STATION PRIOR TO ENTERING
A TUNNEL.

5. END OF CONVOY MOVEMENT ORDER VA10167C

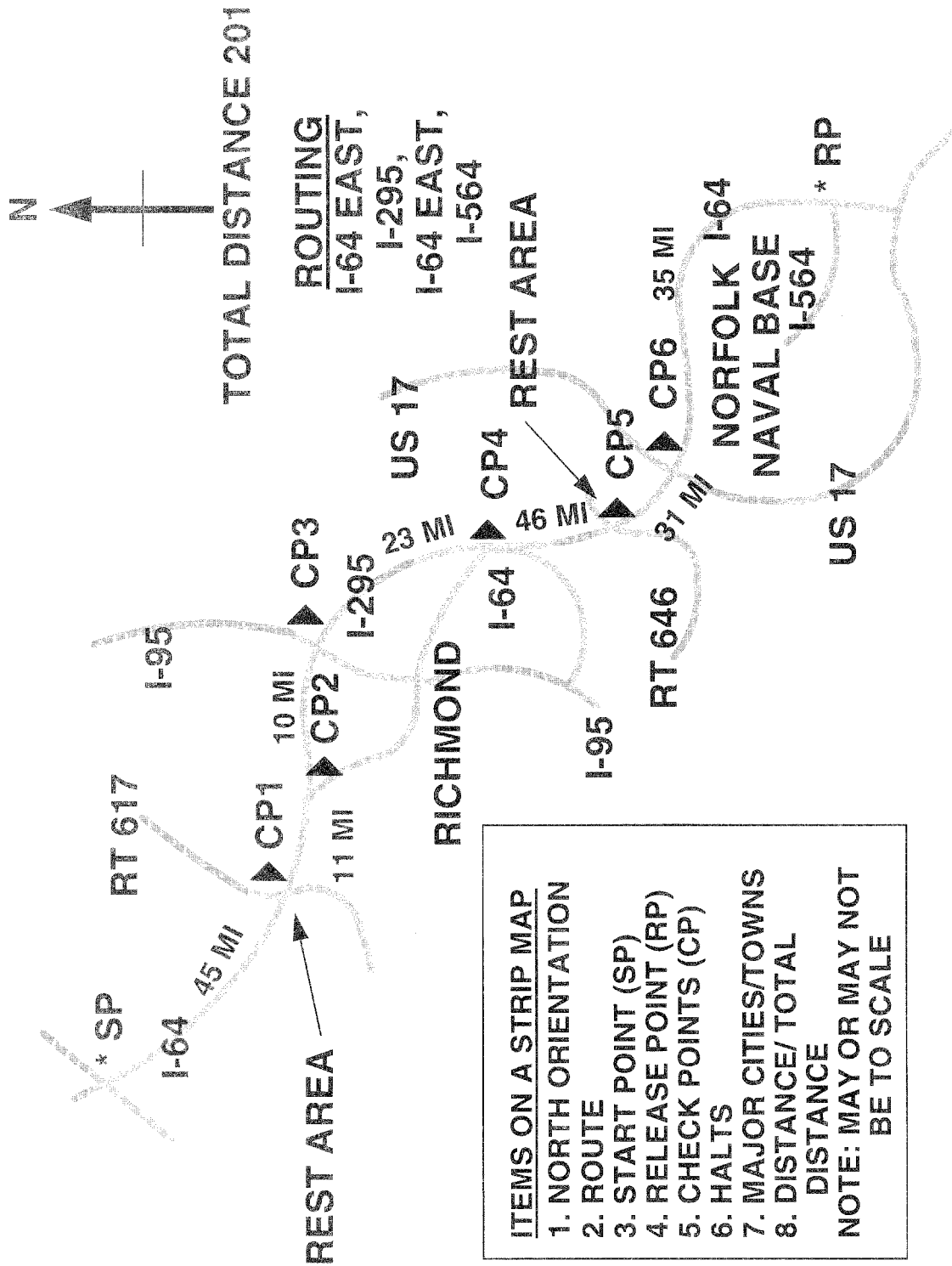


Figure 7-3. Sample Convoy Strip Map

CONVOY CALCULATIONS AND FORMS



1

References

- FM 4-01.011, *Unit Movement Operations*, Appendix C
- FM 55-30, *Army Motor Transport Units and Operations*, Appendix J
- FORSCOM/ARNG Regulation 55-1, *Unit Movement Planning*, Chapter 7
- TB 55 - 46 - 1, *Standard Characteristics for Transportability of Military Vehicles and Other Outsize/Overweight Equipment*, Chapter 3



2

Scope of Lesson

- Terminology
- Formulas
 - Time Distance
 - Density
 - Pass Time
- Scenarios
 - DD Form 1265 (Request for Convoy Clearance)
 - DD Form 1266 (Request for Special Hauling Permit)
- PE



3

Convoy Operations and the UMO

- Once given certain information about the convoy movement (start times, end times, rest halts & locations), the UMO:
 - Prepares a Road Movement Table
 - Prepares DD Forms 1265 & 1266
- The UMO should know the basic terms and formulas that are used in convoy planning and be able to compile/check DD Forms 1265 and 1266

4

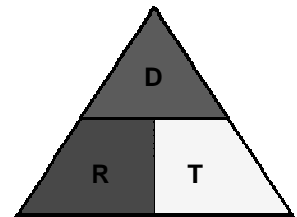
Terminology

- **Distance (D):** How far a march column travels expressed in miles or kilometers
- **Time (T):** How long it takes to complete a move, including halts
- **Rate (R):** Kilometers or miles traveled in an hour (speed)

5

Distance, Rate & Time

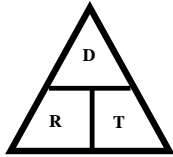
- The three basic march factors are: Distance, Rate & Time
- When two of the three factors are known, the third can be found by a simple math equation



6

Time Distance Calculations

$$\text{DISTANCE} = \text{RATE} \times \text{TIME}$$



$$\text{RATE} = \frac{\text{DISTANCE}}{\text{TIME}}$$

$$\text{TIME} = \frac{\text{DISTANCE}}{\text{RATE}}$$

7

Time Distance

RELEASE POINT
FT STORY

START POINT
FT EUSTIS

45 MPH



(45 MPH)

8

Time Distance Formula

- Time Distance:
 - The time required for a vehicle to move from one point to another at a given rate of march (Move from SP to CP1)

$$\frac{\text{Distance (miles)} \times 60}{\text{Rate (mph)}} = \text{TIME (minutes)}$$

$$\frac{11 \text{ (miles)} \times 60}{40 \text{ (mph)}} =$$

$$660 \div 40 = 16.5 \text{ minutes} = 17 \text{ minutes}$$

(Always round up)

Ref: FM 4-01.011, p.C-4

9

D, R & T & DD Form 1265

- Computation of the time it will take to arrive and depart a particular point is crucial
- Computation results in ETAs and ETDs of march column at state lines, major road junctions, bridges, tunnels, checkpoints & other critical points
- Must determine "Density" and "Pass Time"

10

Density



1 Mile

11

Density Formula

- Density is the number of vehicles, with an constant vehicle gap, in a mile

$$\text{Density} = \frac{1760 \text{ yards (1 mile)}}{\text{Vehicle gap in yards} + \text{average vehicle length in yards}}$$

$$\begin{array}{l} \text{AVG. VEHICLE GAP} = 100 \text{ YDS} \\ \text{AVG. VEHICLE LENGTH} = 10 \text{ YDS} \end{array} \quad \frac{1,760}{100+10} = 16 \text{VPM}$$

Always ROUND: eg 16.1 = 16 VPM, 16.5 = 17 VPM

Ref: FM 4-01.011, p.C-5

12

Density Calculations

- Calculating the Average Vehicle Length:
- **Step 1:** Use TB 55-46-1 to find the length of vehicles. Note that all vehicle lengths are given in inches (note vehicle unions)
- **Step 2:** Add all vehicle lengths together
- **Step 3:** Divide by the number of vehicles
- **Step 4:** Divide the average length (given in inches) by 36 (36 inches in a yard).
- Answer = Average vehicle length in yards

13

Density Calculations (cont)

- Calculating the Average Vehicle Length:
- Use the TB 55-46-1 to find the following vehicle lengths

Vehicle	Length	Vehicle	Length
M915/ M131A4C	_____	M 929A2	_____
M35A2C /M149	_____	M 931A2	_____
M931/M871	_____	M998	_____
M984A1 WWN	_____	M923A2	_____
M35A2C	_____	M109 WWN	_____

- Then calculate the average vehicle length

14

Density Calculations (cont)

- **Step 4:** Find the average vehicle length (given in inches) by 36 (36 inches in a yard)

$$\frac{\text{_____}}{36} = \text{_____} = \text{_____ yards (always ROUND UP)}$$

The average vehicle length for this convoy is therefore _____.

15

Density Formula

- Next add the average vehicle length in yards to the vehicle gap in yards and divide 1760 by that number.

$$\text{Density} = \frac{1760 \text{ yards (1 mile)}}{\text{Vehicle gap in yards} + \text{average vehicle length in yards}}$$

$$\begin{aligned} \text{AVG. VEHICLE GAP} &= 100 \text{ YDS} & \frac{1,760}{100 + \text{_____}} &= \text{_____ VPM} \\ \text{AVG. VEHICLE LENGTH} &= \text{_____ YDS} & & \end{aligned}$$

16

Ref: FM 4-01.011, p.C-5

Pass Time



17

Pass Time

- **Pass Time:** The length of time required for a convoy (or a subgroup) to pass a given point on the route
- Knowing how to compute pass time is essential to a planner who must calculate a convoy's ETD from a checkpoint
- Don't forget to include the time gaps (time interval between elements of a convoy as they pass a given point) when calculating the pass time

Ref: FM 4-01.011, p.C-4

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Pass Time Formula

- Pass Time / Time Length:
 - Length of time it takes for the entire march column to pass a given point

$$\text{Pass Time (in mins)} = \frac{\text{Number of Vehicles X 60}}{\text{Density X Rate}} + \text{Time Gaps or Extra Time}$$

Ref: FM 4-01.011, p.C-5

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Pass Time Calculation

- Pass Time / Time Length:

$$\text{Pass Time (in min)} = \frac{\text{Number of vehicles X 60}}{\text{Density X Rate}}$$

$$\frac{10 \times 60}{16 \times 45} = \frac{600}{720} = 0.83$$

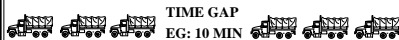
= 1 minutes (always round up)

20

Time Gaps



A MARCH COLUMN - NO TIME GAP



TIME GAP

EG: 10 MIN

MARCH COLUMN DIVIDED INTO TWO ELEMENTS - ONE TIME GAP (EG 10 MINS)



TIME GAP

EG: 10 MIN

TIME GAP

EG: 10 MIN

MARCH COLUMN DIVIDED INTO THREE ELEMENTS - TWO TIME GAPS (EG 20 MINS)

21

Pass Time Calculations (cont)

☆ + 0 FOR THE TIME GAP

$$\frac{10 \times 60}{16 \times 45} = \frac{600}{720} = 0.83 = 1 \text{ mins} + 0 = 1$$

(always round up) (time gap) (Mins)

🕒 + 20 MIN FOR THE TIME GAP

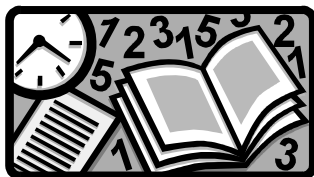
$$\frac{10 \times 60}{16 \times 45} = \frac{600}{720} = 0.83 = 1 \text{ mins} + 20 = 21$$

(always round up) (time gap) (Mins)

22

SUMMARY

- Simple convoy calculations involving the three basic factors of distance, rate and time
- Time Distance formula
- Density formula
- Pass Time formula
- Time gaps



23

DD Form 1265
&
DD Form 1266

24

DD Form 1265 Request for Convoy Clearance

- DD Form 1265 is the form completed by the UMO to request convoy clearance
- No convoy movement is permitted over public highways without a Convoy Clearance Number (CCN)

25

DD Form 1265

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DD Form 1265 (Cont)

REQUEST FOR CONVOY CLEARANCE	1. CONVOY NUMBER	2. UIC	3. DATE (YYYYMMDD)
		WFSPAA	2001/08/18

- Block 1: Convoy Number (leave blank - the ITO may enter the CCN once known)
- Block 2: UIC
- Block 3: Date form prepared

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DD Form 1265 (Cont)

SECTION I - GENERAL		
4. ORGANIZATION	5. STATION	6. CONVOY COMMANDER
316th Trans Co (Lt/Mdm Trk)	Bldg 1234, Fort Story, VA 23459	John J. Jones 2LT

- Block 4: Organization
- Block 5: Station
- Block 6: Convoy Commander

Ref: FORSCOM/ARNG Reg 55-1, pg.58

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DD Form 1265 (Cont)

7. PERSONNEL STRENGTH		8. POINT OF ORIGIN	9. DESTINATION
a. OFFICER	b. ENLISTED	Fort Story, VA	Port of Charleston, SC
1	47		

- Block 7: Personnel Strength
- a. Officer b. Enlisted
- Block 8: Point of Origin (SP) - include city and state
- Block 9: Destination (RP) - include city and state

Ref: FORSCOM/ARNG Reg 55-1, pg.58

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DD Form 1265 (Cont)

10. DATE AND TIME		11. RATE OF MARCH
a. DEPARTURE	b. ARRIVAL	45 MPH, 50 max catch-up
08/28/01 0700	08/28/01 1641	

- Block 10: Date & Time
- a. Departure (first vehicle crosses SP)
- b. Arrival (last vehicle crosses RP)
- Block 11: Rate of March - convoy and max (catch-up)

Ref: FORSCOM/ARNG Reg 55-1, pg.58

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DD Form 1265 (Cont)

SECTION II - CONVOY COMPOSITION					
12. NUMBER OF EACH TYPE OF VEHICLE AND DESCRIPTION (Include towed equipment)					
19 ea M923 Trk Cgo D/S 5 Ton					
2 ea M998 Trk Util Cgo/Tpr Carr					
1 ea M96A2 Truck Tractor 6x6 towing 1 ea M870A1 Stlr Low Bed 40 Ton					
List of vehicles by type and model number. Include total number of each type and match vehicles with their assigned trailers.					
13. TOTAL NUMBER OF VEHICLES	14. NUMBER OF OVERSIZE/OVERWEIGHT VEHICLES	15a. NO. OF SERIALS	b. TIME INTERVAL	16a. NO. OF MARCH UNITS	b. TIME INTERVAL
22	1	NA	NA		

Block 12: Number of Each Type of Vehicle & Description

Ref: FORSCOM/ARNG Reg 55-1, pg.58

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DD Form 1265 (Cont)

SECTION III - ROUTE DATA					
13. TOTAL NUMBER OF VEHICLES	14. NUMBER OF OVERSIZE/OVERWEIGHT VEHICLES	15a. NO. OF SERIALS	b. TIME INTERVAL	16a. NO. OF MARCH UNITS	b. TIME INTERVAL
22	1	NA	NA		

Block 13: Total Number of Vehicles (don't count trailers)

Block 14: Number of Oversize/Overweight Vehicles

Blocks 15a/B: Mark "NA" - serials not recognized by MOBCON

Ref: FORSCOM/ARNG Reg 55-1, pg.58

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DD Form 1265 (Cont)

SECTION III - ROUTE DATA					
13. TOTAL NUMBER OF VEHICLES	14. NUMBER OF OVERSIZE/OVERWEIGHT VEHICLES	15a. NO. OF SERIALS	b. TIME INTERVAL	16a. NO. OF MARCH UNITS	b. TIME INTERVAL
22	1	NA	NA	3	10

Block 16a: No. of March Units b: Time Interval

Ref: FORSCOM/ARNG Reg 55-1, pg.58

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DD Form 1265 (Cont)

SECTION III - ROUTE DATA	
17. PROPOSED ROUTING (Indicate US Routes, State Routes, etc.)	
Ft Story to I 264 W, US 58 W, I 95 S, I 26 E, US 17 S to Port of Charleston	
List street/highway/road routing in order of use from Starting Point (SP) to Release Point (RP).	

Block 17: Proposed Routing (Indicate Interstates ['I'], US Highways ['US'] and State Routes ['S'], etc.)

Ref: FORSCOM/ARNG Reg 55-1, pg.58

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DD Form 1265 (Cont)

Block 18: List location of each halt and critical points (consider change in time zone)

18. ETA AND ETD AT STATE LINES, MAJOR ROAD JUNCTIONS, MAJOR BRIDGES AND TUNNELS, METROPOLITAN AREAS AND OVERNIGHT HALT SITES (Continue on a separate sheet if additional space is required)				
a. LOCATION	b. ETA	c. DATE (YYYYMMDD)	d. ETD	e. DATE (YYYYMMDD)
SP (I 264 W / US 58 W) [Fort Story]	0700	2001/08/28	0723	2001/08/28
CP1 (US 58 W / I 95 S [Emporia, VA])	0800		0828	
CP2 (I 95 S / VA - NC State Line)	1015		1038	
CP3 (I 95 S / US 421 [Dunn, NC])	1215		1338	
CP4 (I 95 S / NC - SC State Line)	1400		1423	
CP5 (I 95 S / I 26 E [Manning SC])	1600		1623	
RP (I 26 E / US 17 S [Charleston SC])	1618		1641	

a. Location b. ETA c. Date d. ETD e. Date

Ref: FORSCOM/ARNG Reg 55-1, pg.58

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DD Form 1265 (Cont)

SECTION IV - LOGISTICAL DATA	
19. BRIEF GENERAL DESCRIPTION OF CARGO (Brief general description, i.e., organizational impediments, etc.) (Within security limitations)	
List general description of cargo.	
Examples:	
• Troops with or without weapons	• Any sensitive documents
• Tanker filled or empty	• Hazardous Cargo

Block 19: Description of Load (a brief general description within security limitations)

Ref: FORSCOM/ARNG Reg 55-1, pg.58

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DD Form 1265 -- Back

20. ARE EXPLOSIVES TO BE TRANSPORTED?		YES	<input checked="" type="checkbox"/> NO (If YES, describe below)
a. CLASS	b. AMOUNT	c. DESCRIPTION	d. VEHICLES TO BE USED
			(1) NO. (2) TYPE
		N/A	

21. STATEMENT WHY EXPLOSIVES CANNOT BE TRANSPORTED COMMERCIALY (Movements involving explosives and/or other dangerous articles are required to comply with all applicable regulations or directives)

Block 20: Are explosives to be transported?

If no then mark box and place N/A in center

Ref: FORSCOM/ARNG Reg 55-1, pg.58

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DD Form 1265 -- Back (Cont)

20. ARE EXPLOSIVES TO BE TRANSPORTED?		YES	<input checked="" type="checkbox"/> NO (If YES, describe below)
a. CLASS	b. AMOUNT	c. DESCRIPTION	d. VEHICLES TO BE USED
1.3C	60 lbs	Cartridges, for small arms, blank	(1) NO. (2) TYPE

21. STATEMENT WHY EXPLOSIVES CANNOT BE TRANSPORTED COMMERCIALY (Movements involving explosives and/or other dangerous articles are required to comply with all applicable regulations or directives)

Block 20: Are explosives to be transported?

If yes, describe: Column a: Class

Column b: Amount Column c: Description

Ref: FORSCOM/ARNG Reg 55-1, pg.58

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DD Form 1265 -- Back (Cont)

20. ARE EXPLOSIVES TO BE TRANSPORTED?		YES	<input checked="" type="checkbox"/> NO (If YES, describe below)
a. CLASS	b. AMOUNT	c. DESCRIPTION	d. VEHICLES TO BE USED
1.3C	60 lbs	Cartridges, for small arms, blank	(1) NO. (2) TYPE

21. STATEMENT WHY EXPLOSIVES CANNOT BE TRANSPORTED COMMERCIALY (Movements involving explosives and/or other dangerous articles are required to comply with all applicable regulations or directives)

Time constraints do not allow commercial shipping

Block 20: Column d: Vehicles to be used

(1) No. (2) Type

Block 21: Statement why explosives cannot be transported commercially

Ref: FORSCOM/ARNG Reg 55-1, pg.58

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DD Form 1265 -- Back (Cont)

22. LOGISTICAL SUPPORT REQUIRED AT OVERNIGHT HALT SITES?		YES	<input checked="" type="checkbox"/> NO
a. DATE (YYYY/MM/DD)	b. INSTALLATION	c. GAS (gals)	d. OIL (gals)

Block 22: Logistical Support Required at Overnight Halt Sites? Yes or No

If yes, complete the following: a: DATE (YYYY/MM/DD)

b: Installation c: Gas (gals) d: Oil (gals)

e: Rations f: Billets g: Other

Ref: FORSCOM/ARNG Reg 55-1, pg.58

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DD Form 1265 -- Back (Cont)

Block 23: Remarks

23. REMARKS
<p>This block is to be used to inform the chain of command of any unique convoy requirements.</p> <ul style="list-style-type: none"> - Planned location of fuel and meal halts. - Types of radios - Specific support requirements. - List each oversized/over weight vehicle (truck or truck trailer combinations) with load description. <p>Note: Enter name, rank, telephone and fax number of convoy point of contact (POC) during normal duty hours.</p>
24. REQUESTING AGENCY
25. APPROVING AGENCY

Ref: FORSCOM/ARNG Reg 55-1, pg.58

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DD Form 1265 -- Back (Cont)

24. REQUESTING AGENCY	25. APPROVING AGENCY
316th Trans Co	Approved through DMC (SMCC) in convoy's state of origin or ITO/ UMC
26. REQUESTED BY	
a. NAME (Last, First, Middle Initial)	
b. GRADE	
c. TITLE	
d. SIGNATURE	e. DATE (YYYY/MM/DD)
Charles C. Chestnut	2001/08/18

INSTRUCTIONS: In cases where bona-fide emergencies exist, the

Block 24: Requesting Agency

Block 26: Requested By:

Name, Grade, Title, Signature, & Date

Ref: FORSCOM/ARNG Reg 55-1, pg.58

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Pass Time Calculations (cont)

☆ + 0 FOR THE TIME GAP

$$\frac{10 \times 60}{16 \times 45} = \frac{600}{720} = 0.83 = 1 \text{ mins} + 0 = 1$$

(always round up) (time gap) (Mins)

⌚ + 20 MIN FOR THE TIME GAP

$$\frac{10 \times 60}{16 \times 45} = \frac{600}{720} = 0.83 = 1 \text{ mins} + 20 = 21$$

(always round up) (time gap) (Mins)

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ETA/ETD Example (cont)

Examples From The Previous Slide

	ETA/ETD	
	ETA	ETD
1. Start Point	1400	1401
2. Start Point	1400	1421

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Convoy Calculations

Classroom Example

GIVEN

- Rate of March 45mph
- SP to CP1 45 mi
- Break at CP1 15 minutes
- CP1 to RP 45 mi
- Pass Time 21 min
- Start time 1400

$$\text{TIME DISTANCE} = \frac{\text{Distance (miles)} \times 60}{\text{Rate (mph)}}$$

$$\begin{aligned} \text{SP to CP1} & \quad \frac{45 \times 60}{45} = \frac{2700}{45} = 60 \text{ (minutes)} \\ \text{CP1 to RP} & \quad \frac{45 \times 60}{45} = \frac{2700}{45} = 60 \text{ (minutes)} \end{aligned}$$

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Prepare Block 18 of DD Form 1265

18. ETA AND ETD AT STATE LINES, MAJOR ROAD JUNCTIONS, MAJOR BRIDGES AND TUNNELS, METROPOLITAN AREAS AND OVERNIGHT HALT SITES (Continue on a separate sheet if additional space is required)				
a. LOCATION	b. ETA	c. DATE	d. ETD	e. DATE
Start Point	1400		1421	
CP1 (15 min halt)	1500		1536	
RP	1615		1636	

First vehicle in convoy

Last vehicle in convoy

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First Requirement: Convoy Calculations

GIVEN

- Number of vehicles 20
- Rate of March 40mph
- Density 20 vehs per mile
- Break at CP1 15 minutes
- Start time 1400
- SP to CP1 40 mi
- CP1 to CP2 10 mi
- CP2 to RP 20 mi

DETERMINE

(Always round up when computing)

- PASS TIME
- TIME DISTANCE
 - SP to CP1
 - CP1 to CP2
 - CP2 to RP
- ETA/ETD

Q. How many elements is the convoy broken into?

A. One (no time gap)

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Second Requirement: Convoy Calculations

GIVEN

- Number of vehicles 40
- Rate of March 40mph
- Density 20 vehs per mile
- Time Gap 10 minutes
- Break at CP1 20 minutes
- Start time 1300
- SP to CP1 60 mi
- CP1 to CP2 40 mi
- CP2 to CP3 60 mi
- CP3 to RP 20 mi

DETERMINE

(Always round up when computing)

- PASS TIME
- TIME DISTANCE
- ETA/ETD

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DD Form 1266 Request for Special Hauling Permit

- Completed by UMO or alternate UMO
- Forwarded in same channels as DD Form 1265
- Used to obtain special hauling permits for highway movement of oversize/overweight vehicles (as part of a convoy or separately)

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OVER-DIMENSIONAL/OVER-WEIGHT VEHICLES

- Dimension and weight limitations vary from state to state (see Appendix E of FM 55-30)
- Check local rules and restrictions before any convoy movement
- Gross planning purposes - vehicles considered over-dimensional/over-weight if they exceed any one of the following dimensions/weight:

Width:	102 inches (8 feet, 6 inches)
Height:	162 inches (13 feet, 6 inches)
Length:	60 feet for semi-trailers
Weight:	20,000 pounds for single axle
	34,000 pounds for tandem axles
	80,000 pounds gross weight

Ref: FM 4-01.011, p.C-1

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FM 55-30 Appendix E

SUMMARY OF U.S. SIZE & WEIGHT LIMITS

American Trucking Associations, Inc. January XXXX

STATE	HEIGHT In Feet/ Inches	WIDTH In Inches	LENGTH (FT-IN)						
			Tractor-Semitrailer Combinations			Twin Combinations			
			Truck (Single Unit)	Semitrailer Length on Interstate & National Network*	Semitrailer Length Off National Network*	Overall Combination Length on Other Roads	Semitrailer or Trailer on Interstate & National Network	Twin Combination Length on Other Roads	Straight Truck + Trailer
Alabama	13-6	102"	40-0	57'	53-6"	NR	28-6	28-6"	53-6
Alaska	14-0	102	40-0	48	45	70	95-12	75	75
Arizona	14-0*	102*	40-0	57-6	53NR**	85**	28-6	NR	NR**

- Each state has specific regulations governing the use of its highways

North Carolina	13-6	102*	40-0*	53'	NR**	60*	28	NR	60
North Dakota	14-0	102	50-0	50	53	75/85SP	53*	75/85SP	75*
Ohio	13-6	102	40-0	53	53	NR	28-6	NR	65

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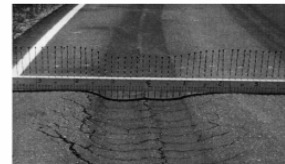
Tractor trailer that overloaded a bridge



Fatal accident when load was too high



Road damage from overweight vehicles



DD Form 1266

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DD Form 1266 (Cont)

REQUEST FOR SPECIAL HAULING PERMIT		1. CONVOY NUMBER	2. UIC	3. DATE (YYYYMMDD)
			WADSAA	0000/08/28
SECTION I - GENERAL				
4. ORGANIZATION	5. STATION	6. DATE OF MOVEMENT (YYYYMMDD)		

Block 1: Convoy Number (leave blank)

Block 2: UIC

Block 3: Date

Ref: FORSCOM/ARNG Reg 55-1, pg. 61

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DD Form 1266 (Cont)

SECTION I - GENERAL			
4. ORGANIZATION 100th Trans Co (Mdm Trk)	5. STATION Building 1234, Fort Eustis, VA 23604	6. DATE OF MOVEMENT (YYYYMMDD) a. STARTING 0000/08/28 b. COMPLETION 0000/08/28	

Block 4: Organization

Block 5: Station

Block 6: Date of Movement:

a. Starting b. Completion

Ref: FORSCOM/ARNG Reg 55-1, pg. 61

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DD Form 1266 (Cont)

7. POINT OF ORIGIN Ft Eustis, VA			8. DESTINATION CAMP A.P Hill, VA		
9. ARRIVAL AT STATE LINES a. DATE (YYYYMMDD) b. TIME c. STATE LINE N/A					
10. ROUTING (Stipulate US Routes, State Routes, etc.)					
11. ESCORT REQUIREMENTS					

Block 7: Point of Origin

Block 8: Destination

Block 9: Arrival at State Lines:

a. Date b. Time c. State Line

Ref: FORSCOM/ARNG Reg 55-1, pg. 61

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DD Form 1266 (Cont)

7. POINT OF ORIGIN Ft Eustis, VA			8. DESTINATION CAMP A.P Hill, VA		
9. ARRIVAL AT STATE LINES a. DATE (YYYYMMDD) b. TIME c. STATE LINE N/A			10. ROUTING (Stipulate US Routes, State Routes, etc.) Ft Eustis to I 64 N, S 168 N, S 33 N, I 95 S, S 301 W to Camp A. P. Hill		
11. ESCORT REQUIREMENTS 2 ea M998 Trk Util Cgo/Tpr Carr (one front/one rear)					

Block 10: Routing

Block 11: Escort Requirements

Ref: FORSCOM/ARNG Reg 55-1, pg. 61

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DD Form 1266 (Cont)

Section II - Vehicle and Load Data

SECTION II - VEHICLE AND LOAD DATA							
DESCRIPTION a.	TYPE (2-ton, etc.) b.	NO. OF VEHICLES c.	REGISTRATION NUMBER d.	HEIGHT e.	WIDTH f.	LENGTH g.	WEIGHT h.
12. VEHICLE							
(1) TRUCK							(Empty)
(2) TRUCK-TRACTOR							(Empty)
(3) TRAILER							(Empty)
(4) SEMI-TRAILER							(Empty)
(5) OTHER (Specify)							(Empty)
13. LOAD							
14. OVERALL (Vehicle and load)							
15. DESCRIPTION OF LOAD (Brief general description: Organization impediments, etc.) (Within security limitations)							

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DD Form 1266 (Cont)

Section II - Vehicle and Load Data

SECTION II - VEHICLE AND LOAD DATA							
DESCRIPTION a.	TYPE (2-ton, etc.) b.	NO. OF VEHICLES c.	REGISTRATION NUMBER d.	HEIGHT e.	WIDTH f.	LENGTH g.	WEIGHT h.
12. VEHICLE							
(1) TRUCK							(Empty)
(2) TRUCK-TRACTOR	M915	25 ton					(Empty)
(3) TRAILER							(Empty)
(4) SEMI-TRAILER	M872	34 ton					(Empty)
(5) OTHER (Specify)							(Empty)
13. LOAD							

Block 12 Vehicle - Columns

a: Description b: Type (eg, 2-Ton - see tables 2-7 to 2-14 in TB 55-46-1)

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DD Form 1266 (Cont)

SECTION II - VEHICLE AND LOAD DATA							
DESCRIPTION a.	TYPE (2-ton, etc.) b.	NO. OF VEHICLES c.	REGISTRATION NUMBER d.	HEIGHT e.	WIDTH f.	LENGTH g.	WEIGHT h.
12. VEHICLE							
(1) TRUCK							(Empty)
(2) TRUCK-TRACTOR	M915	25 ton	1	9T1234			(Empty)
(3) TRAILER							(Empty)
(4) SEMI-TRAILER	M872	34 ton	1	8T9872			(Empty)
(5) OTHER (Specify)							(Empty)

Block 12: Vehicle - Columns

c. No. of Vehicles d. Registration No.

Ref: FORSCOM/ARNG Reg 55-1, pg. 61

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DD Form 1266 (Cont)

SECTION II - VEHICLE AND LOAD DATA				INCHES			POUNDS			
DESCRIPTION a.	TYPE (if not, etc.) b.	NO. OF VEHICLES c.	REGISTRATION NUMBER d.	HEIGHT e.	WIDTH f.	LENGTH g.	WEIGHT h.			
12. VEHICLE				OPERATIONAL CONFIGURATION			(Empty)			
(1) TRUCK										
(2) TRUCK-TRACTOR	M915	1	1234				131	123	269	18,621
(3) TRAILER										(Empty)
(4) SEMI-TRAILER	M872	1	9872				58	96	490	17,390
(5) OTHER (Specify)	Bed height			106				(Empty)		

Block 12: Vehicle - Columns
e. Height f. Width g. Length h. Weight

Ref: FORSCOM/ARNG Reg 55-1, pg. 61

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DD Form 1266 (Cont)

SECTION II - VEHICLE AND LOAD DATA							
DESCRIPTION a.	TYPE (if not, etc.) b.	NO. OF VEHICLES c.	REGISTRATION NUMBER d.	HEIGHT e.	WIDTH f.	LENGTH g.	WEIGHT h.
(Specify)							
13. LOAD	MILVAN			149	96	242	30,000
14. OVERALL (Vehicle and load)							
15. DESCRIPTION OF LOAD (Brief general description: Organization impediments, etc.) (Within security limitations)							

Line 13: Load (determine if in reduced/operational configuration)
e. Height, f. Width, g. Length, h. Weight

Ref: FORSCOM/ARNG Reg 55-1, pg. 61

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DD Form 1266 (Cont)

SECTION II - VEHICLE AND LOAD DATA							
DESCRIPTION a.	TYPE (if not, etc.) b.	NO. OF VEHICLES c.	REGISTRATION NUMBER d.	HEIGHT e.	WIDTH f.	LENGTH g.	WEIGHT h.
12. VEHICLE							
13. LOAD	MILVAN			149	96	242	30,000
14. OVERALL (Vehicle and load)							
15. DESCRIPTION OF LOAD (Brief general description: Organization impediments, etc.) (Within security limitations)							

Line 14: Overall (Vehicle and Load) --
e. Height, f. Width g. Length, h. Weight

Ref: FORSCOM/ARNG Reg 55-1, pg. 61

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Determining Overall Length

Outsized/Overweight vehicle

NOTE: The Union for combinations can be found in TB 55-46-1, Appendix C, but if the combination cannot be found, subtract 100 inches from the total length of the truck-tractor and the semi-trailer to account for the coupling overlap while connected.



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DD Form 1266 (Cont)

15. DESCRIPTION OF LOAD (Brief general description: Organization impediments, etc.) (Within security limitations)			
One MILVAN			

Block 15: Description of Load (a brief general description within security limitations)

Ref: FORSCOM/ARNG Reg 55-1, pg. 61

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DD Form 1266 (Cont)

16. LOAD OVERHANG			
a. FRONT	b. REAR	c. LEFT SIDE	d. RIGHT SIDE
NA	NA	NA	NA

DD FORM 1266, SEP 1998 (EG)

PREVIOUS EDITION IS OBSOLETE.

Designed using Reform Pro, WHS/DOR, Sep 98

Block 16: Load Overhang

a. Front b. Rear c. Left Side d. Right Side

Ref: FORSCOM/ARNG Reg 55-1, pg. 61

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DD Form 1266 -- Back

17. NUMBER OF AXLES	1	2	3	4	5	6	7	8	9	10	TOTAL
AXLE 1	AXLE 2	AXLE 3	AXLE 4	AXLE 5	AXLE 6	AXLE 7	AXLE 8	AXLE 9	AXLE 10		
18. NUMBER OF TIRES											
19. TIRE WIDTH (Inches)											
20. TIRE SIZES											
21. AXLE LOAD (Empty)											
22. AXLE LOAD (Loaded)											
23. AXLE SPACING (See item 17 for identification)	A SPACING	B SPACING	C SPACING	D SPACING	E SPACING	F SPACING	G SPACING	H SPACING			

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DD Form 1266 -- Back (Cont)

17. NUMBER OF AXLES	1	2	3	4	5	6	TOTAL
AXLE 1	AXLE 2	AXLE 3	AXLE 4	AXLE 5	AXLE 6		
18. NUMBER OF TIRES							
19. TIRE WIDTH (Inches)							
20. TIRE SIZES							
21. AXLE LOAD (Empty)							
22. AXLE LOAD (Loaded)							
23. AXLE SPACING (See item 17 for identification)	A SPACING	B SPACING	C SPACING	D SPACING	E SPACING	F SPACING	

Block 17: Axle Numbers correspond to columns

Ref: FORSCOM/ARNG Reg 55-1, pg. 61

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DD Form 1266 -- Back (Cont)

Block 18:
Number of TiresBlock 19:
Tire Width (Inches)Block 20:
Tire Sizes

17. NUMBER OF AXLES	1	2	3	4	5	6	7	8	9	10	TOTAL
AXLE 1	AXLE 2	AXLE 3	AXLE 4	AXLE 5	AXLE 6	AXLE 7	AXLE 8	AXLE 9	AXLE 10		
18. NUMBER OF TIRES	2	4	4	4	4	4					
19. TIRE WIDTH (Inches)	22	44	44	44	44	44					
20. TIRE SIZES	11 x20	11 x20	11 x20	11 x20	11 x20	11 x20					
21. AXLE LOAD (Empty)											
22. AXLE LOAD (Loaded)											
23. AXLE SPACING (See item 17 for identification)	A SPACING	B SPACING	C SPACING	D SPACING	E SPACING	F SPACING	G SPACING	H SPACING			

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DD Form 1266 -- Back (Cont)

17. NUMBER OF AXLES	1	2	3	4	5	6	7	8	9	10	TOTAL
AXLE 1	AXLE 2	AXLE 3	AXLE 4	AXLE 5	AXLE 6	AXLE 7	AXLE 8	AXLE 9	AXLE 10		
18. NUMBER OF TIRES	2	4	4	4	4	4					22
19. TIRE WIDTH (Inches)	22	44	44	44	44	44					242
20. TIRE SIZES	11 x20	11 x20	11 x20	11 x20	11 x20	11 x20					
21. AXLE LOAD (Empty)											
22. AXLE LOAD (Loaded)											
23. AXLE SPACING (See item 17 for identification)	A SPACING	B SPACING	C SPACING	D SPACING	E SPACING	F SPACING	G SPACING	H SPACING			

Ref: FORSCOM/ARNG Reg 55-1, pg. 61

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Line 18 i
Line TotalLine 19 i
Line TotalLine 21 i
Line TotalLine 22 i
Line Total

Table N-1, FM 55-30

Percentages for axle weight distribution

Number of Axles per Vehicle	Type of Vehicle	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6
3	1-1/4ton	.38	.31	.31			
	2-1/2ton	.32	.34	.34			
	Truck-tractor + semi-trailer	.26	.37	.37			
5	10 ton	.24	.38	.38			
	Semitrailer	.14	.21	.21	.22	.22	
6	Semitrailer	.08	.22	.22	.16	.16	.16

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DD Form 1266 -- Back (Cont)

Block 21:
Axle Load (Empty)Block 22:
Axle Load (Loaded)

17. NUMBER OF AXLES	1	2	3	4	5	6	7	8	9	10	TOTAL
AXLE 1	AXLE 2	AXLE 3	AXLE 4	AXLE 5	AXLE 6	AXLE 7	AXLE 8	AXLE 9	AXLE 10		
18. NUMBER OF TIRES	2	4	4	4	4	4					22
19. TIRE WIDTH (Inches)	22	44	44	44	44	44					242
20. TIRE SIZES	1100 x20	1100 x20	1100 x20	1100 x20	1100 x20	1100 x20					
21. AXLE LOAD (Empty)											
22. AXLE LOAD (Loaded)											
23. AXLE SPACING (See item 17 for identification)	A SPACING	B SPACING	C SPACING	D SPACING	E SPACING	F SPACING	G SPACING	H SPACING			

Ref: FORSCOM/ARNG Reg 55-1, pg. 61

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DD Form 1266

-- Back (Cont)

Block 23:

Axle

Spacing

17. NUMBER OF AXLES	① A	② B	③ C	④ D	⑤ E	⑥ F	⑦ G	⑧ H	TOTAL
18. NUMBER OF TIRES	AXLE 1 A	AXLE 2 B	AXLE 3 C	AXLE 4 D	AXLE 5 E	AXLE 6 F	AXLE 7 G	AXLE 8 H	
19. TIRE WIDTH (inches)	2	4	4	4	4	4			22
20. TIRE SIZES	11 x20	11 x20	11 x20	11 x20	11 x20	11 x20			
21. AXLE LOAD (lb/axle)	2881	7922	7922	5672	5672	5672			36011
22. AXLE LOAD (lb/axle)	5281	14522	14522	10562	10562	10562			66011
23. AXLE SPACING <small>(See block 27 for identification)</small>	A SPACING 98	B SPACING 48	C SPACING 100	D SPACING 48	E SPACING 48	F SPACING	G SPACING	H SPACING	
24. REMARKS									

<h1 style="margin: 0;">DD Form 1266</h1> <h2 style="margin: 0;">-- Back (Cont)</h2>	
24. REMARKS <div style="border: 1px solid black; height: 150px; margin-top: 5px;"></div>	
25. MOVEMENT BY HIGHWAY IS <input type="checkbox"/> ESSENTIAL TO NATIONAL DEFENSE <input type="checkbox"/> IN THE INTEREST OF NATIONAL DEFENSE	
26. REQUESTING AGENCY	27. APPROVING AGENCY

Block 24: Remarks

Ref: FORSCOM/ARNG Reg 55-1, pg. 61

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DD Form 1266	
-- Back (Cont)	
24. REMARKS	
25. MOVEMENT BY HIGHWAY IS <input type="checkbox"/> ESSENTIAL TO NATIONAL DEFENSE <input type="checkbox"/> IN THE INTEREST OF NATIONAL DEFENSE	26. REQUESTING AGENCY 27. APPROVING AGENCY

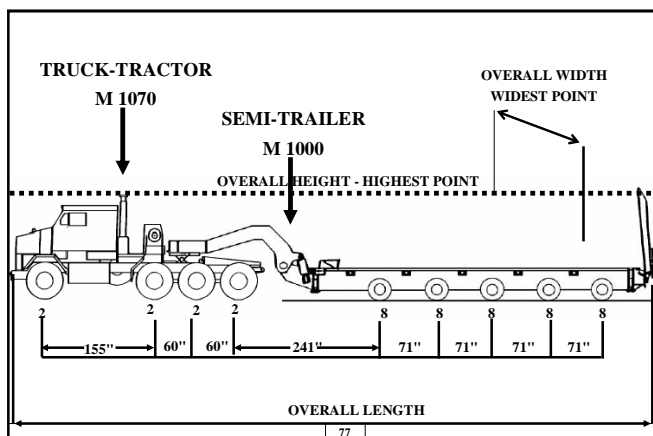
Block 25: Movement by Highway is: (check one)

☒ Essential to National Defense

☐ In the Interest of National Defense

Ref: FORSCOM/ARNG Reg 55-1, pg. 61

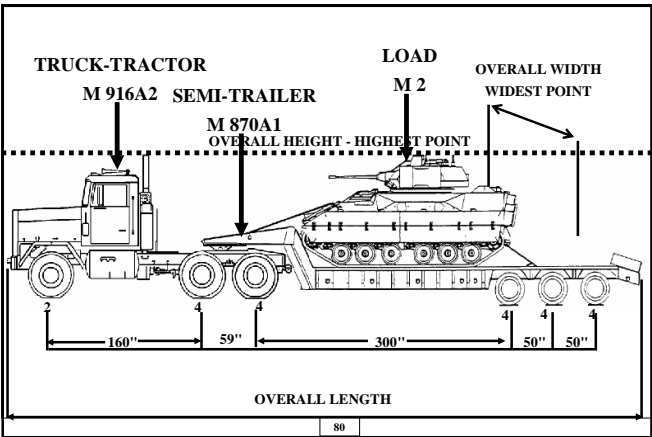
<h1 style="margin: 0;">DD Form 1266</h1> <h2 style="margin: 0;">-- Back (Cont)</h2>		
1. REQUESTING AGENCY 100th Trans Co (Mdm Trk)	27. APPROVING AGENCY DMC or ITO/UMC	<div style="display: flex; align-items: center; justify-content: center;"> <div style="text-align: right; padding-right: 10px;">Blocks 27 & 29:</div> <div style="text-align: center; flex-grow: 1;"> <div style="border: 1px solid black; width: 100px; height: 100px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> </div> </div> <div style="text-align: left; padding-left: 10px;">Approving Agency</div> </div>
28. REQUESTED BY: <small>a. NAME (Last, first, middle initial)</small>	29. APPROVED BY: <small>a. NAME (Last, first, middle initial)</small>	
3. GRADE: c. TITLE:	5. GRADE: e. TITLE:	
4. SIGNATURE: d. DATE (YYYYMMDD)	6. SIGNATURE: e. DATE (YYYYMMDD)	
INSTRUCTIONS		
GENERAL: DD Form 1266, "Request for Special Handling/Retire" will be used to request special handling permits for all government vehicles over 2400 lbs that are being transferred to a new agency or when trading equipment. This form is to be filled out and accompanied by the following documents: 1. A copy of the vehicle's title and license. 2. A copy of the vehicle's maintenance records. 3. A copy of the vehicle's inspection records. 4. A copy of the vehicle's repair records. 5. A copy of the vehicle's accident records. 6. A copy of the vehicle's theft records. 7. A copy of the vehicle's damage records. 8. A copy of the vehicle's disposal records. 9. A copy of the vehicle's transfer records. 10. A copy of the vehicle's inventory records. 11. A copy of the vehicle's appraisal records. 12. A copy of the vehicle's valuation records. 13. A copy of the vehicle's depreciation records. 14. A copy of the vehicle's depreciation schedule. 15. A copy of the vehicle's depreciation calculation. 16. A copy of the vehicle's depreciation report. 17. A copy of the vehicle's depreciation summary. 18. A copy of the vehicle's depreciation statement. 19. A copy of the vehicle's depreciation certificate. 20. A copy of the vehicle's depreciation receipt. 21. A copy of the vehicle's depreciation acknowledgment. 22. A copy of the vehicle's depreciation release. 23. A copy of the vehicle's depreciation transfer. 24. A copy of the vehicle's depreciation assignment. 25. A copy of the vehicle's depreciation delegation. 26. A copy of the vehicle's depreciation authorization. 27. A copy of the vehicle's depreciation approval. 28. A copy of the vehicle's depreciation agreement. 29. A copy of the vehicle's depreciation contract. 30. A copy of the vehicle's depreciation deed. 31. A copy of the vehicle's depreciation will. 32. A copy of the vehicle's depreciation trust agreement. 33. A copy of the vehicle's depreciation lease agreement. 34. A copy of the vehicle's depreciation purchase agreement. 35. A copy of the vehicle's depreciation sale agreement. 36. A copy of the vehicle's depreciation gift agreement. 37. A copy of the vehicle's depreciation exchange agreement. 38. A copy of the vehicle's depreciation merger agreement. 39. A copy of the vehicle's depreciation consolidation agreement. 40. A copy of the vehicle's depreciation division agreement. 41. A copy of the vehicle's depreciation liquidation agreement. 42. A copy of the vehicle's depreciation dissolution agreement. 43. A copy of the vehicle's depreciation reorganization agreement. 44. A copy of the vehicle's depreciation recapitalization agreement. 45. A copy of the vehicle's depreciation stock split agreement. 46. A copy of the vehicle's depreciation stock dividend agreement. 47. A copy of the vehicle's depreciation stock redemption agreement. 48. A copy of the vehicle's depreciation stock repurchase agreement. 49. A copy of the vehicle's depreciation stock option agreement. 50. A copy of the vehicle's depreciation stock purchase agreement. 51. A copy of the vehicle's depreciation stock sale agreement. 52. A copy of the vehicle's depreciation stock transfer agreement. 53. A copy of the vehicle's depreciation stock assignment agreement. 54. A copy of the vehicle's depreciation stock delegation agreement. 55. A copy of the vehicle's depreciation stock authorization agreement. 56. A copy of the vehicle's depreciation stock approval agreement. 57. A copy of the vehicle's depreciation stock agreement. 58. A copy of the vehicle's depreciation stock contract. 59. A copy of the vehicle's depreciation stock deed. 60. A copy of the vehicle's depreciation stock will. 61. A copy of the vehicle's depreciation stock trust agreement. 62. A copy of the vehicle's depreciation stock lease agreement. 63. A copy of the vehicle's depreciation stock purchase agreement. 64. A copy of the vehicle's depreciation stock sale agreement. 65. A copy of the vehicle's depreciation stock gift agreement. 66. A copy of the vehicle's depreciation stock exchange agreement. 67. A copy of the vehicle's depreciation stock merger agreement. 68. A copy of the vehicle's depreciation stock consolidation agreement. 69. A copy of the vehicle's depreciation stock division agreement. 70. A copy of the vehicle's depreciation stock liquidation agreement. 71. A copy of the vehicle's depreciation stock dissolution agreement. 72. A copy of the vehicle's depreciation stock reorganization agreement. 73. A copy of the vehicle's depreciation stock recapitalization agreement. 74. A copy of the vehicle's depreciation stock stock split agreement. 75. A copy of the vehicle's depreciation stock stock dividend agreement. 76. A copy of the vehicle's depreciation stock stock redemption agreement. 77. A copy of the vehicle's depreciation stock stock repurchase agreement. 78. A copy of the vehicle's depreciation stock stock option agreement. 79. A copy of the vehicle's depreciation stock stock purchase agreement. 80. A copy of the vehicle's depreciation stock stock sale agreement. 81. A copy of the vehicle's depreciation stock stock transfer agreement. 82. A copy of the vehicle's depreciation stock stock assignment agreement. 83. A copy of the vehicle's depreciation stock stock delegation agreement. 84. A copy of the vehicle's depreciation stock stock authorization agreement. 85. A copy of the vehicle's depreciation stock stock approval agreement. 86. A copy of the vehicle's depreciation stock stock agreement. 87. A copy of the vehicle's depreciation stock stock contract. 88. A copy of the vehicle's depreciation stock stock deed. 89. A copy of the vehicle's depreciation stock stock will. 90. A copy of the vehicle's depreciation stock stock trust agreement. 91. A copy of the vehicle's depreciation stock stock lease agreement. 92. A copy of the vehicle's depreciation stock stock purchase agreement. 93. A copy of the vehicle's depreciation stock stock sale agreement. 94. A copy of the vehicle's depreciation stock stock gift agreement. 95. A copy of the vehicle's depreciation stock stock exchange agreement. 96. A copy of the vehicle's depreciation stock stock merger agreement. 97. A copy of the vehicle's depreciation stock stock consolidation agreement. 98. A copy of the vehicle's depreciation stock stock division agreement. 99. A copy of the vehicle's depreciation stock stock liquidation agreement. 100. A copy of the vehicle's depreciation stock stock dissolution agreement.		



DD Form 1266 (Cont)							
SECTION II - VEHICLE AND LOAD DATA							
DESCRIPTION a.	TYPE (2-ton, etc) b.	NO. OF VEHICLES c.	REGISTRATION NUMBER d.	HEIGHT e.	WIDTH f.	LENGTH g.	WEIGHT h.
12. VEHICLE							
(1) TRUCK							(Empty)
(2) TRUCK-TRACTOR M1070	HET	1	0134	141	144	362	(Empty) 40999
(3) TRAILER							(Empty)
(4) SEMI-TRAILER M1000	70 TON	1	4444T	43 / 124	144	622	(Empty) 50400
(5) OTHER (Specify)							(Empty)
13. LOAD	NONE						
14. OVERALL (Vehicle and load)				141	144	859	91399

DD Form 1266 (Cont)

17. NUMBER OF AXLES	1	2	3	4	5	6	7	8/9	
	A	B	C	D	E	F	G	H	
	AXLE 1 a.	AXLE 2 b.	AXLE 3 c.	AXLE 4 d.	AXLE 5 e.	AXLE 6 f.	AXLE 7 g.	AXLE 8 h.	TOTAL i.
18. NUMBER OF TIRES	2	2	2	2	8	8	8	8/8	48
19. TIRE WIDTH (Inches)	34.4	34.4	34.4	34.4	53.6	53.6	53.6	53.6/53.6	405.6
20. TIRE SIZES	17.2x20	17.2x20	17.2x20	17.2x20	6.7x17.5	6.7x17.5	6.7x17.5	6.7x17.5/ 6.7x17.5	
21. AXLE LOAD (Empty)	18,468	9,106	9,167	9,159	9,100	9,100	9,100	9,100/9099	91,399
22. AXLE LOAD (Loaded)									NA
23. AXLE SPACING (See Item 17 for Identification)	A SPACING 155	B SPACING 60	C SPACING 60	D SPACING 241	E SPACING 71	F SPACING 71	G SPACING 71	H SPACING 71	



Third Requirement:
Prepare DD Form 1266

GIVEN

•M916A2 6x6 (operational)
•M870A1 40-Ton (operational)
LOAD : M2 (reduced)

•Registration number:
M916A2 (#1234)
M870A1 (#9876)

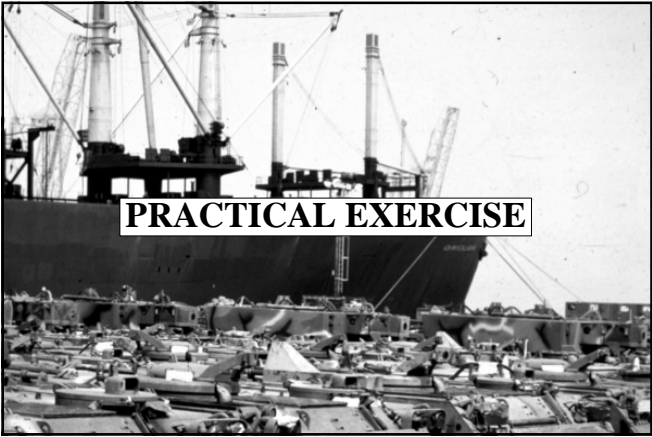
No. of Tires per Axle
M916A2 - 2, 4, 4
M870A1 - 4 (all axles)

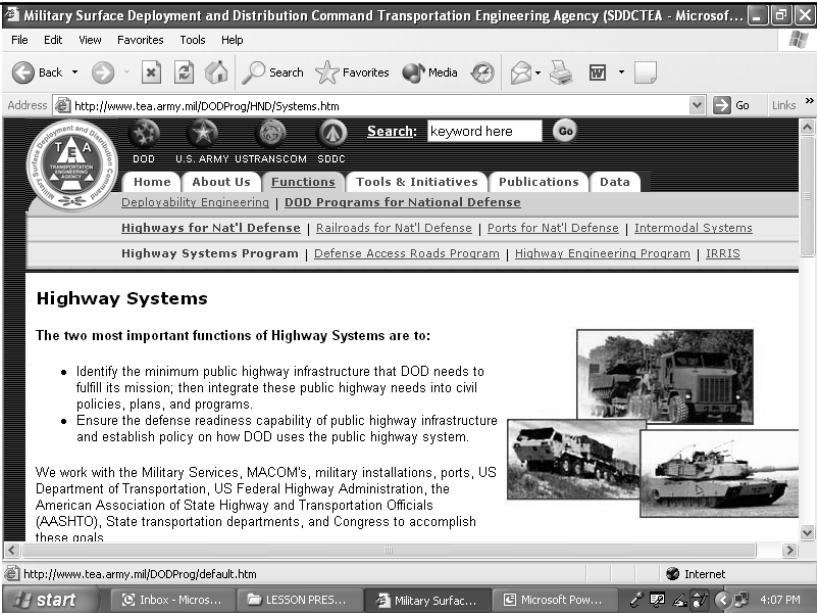
GIVEN

Tire Size: M916A2 (11x22.5)
M870A1 (10x15)
Tire Width: M916A2 = 11"
M870A1 = 10"

Axle Spacing: 160, 59, 300, 50, 50

PRACTICAL EXERCISE





Highway Systems

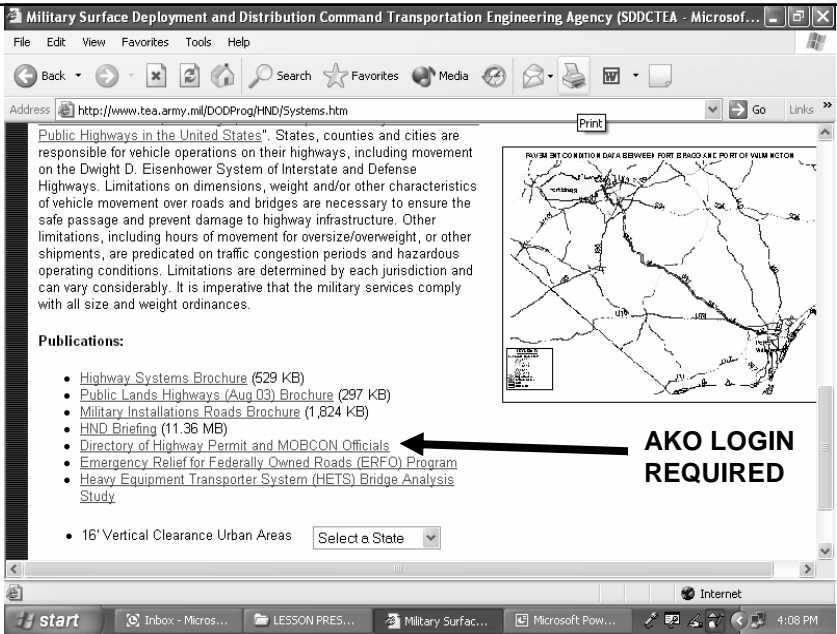
The two most important functions of Highway Systems are to:

- Identify the minimum public highway infrastructure that DOD needs to fulfill its mission; then integrate these public highway needs into civil policies, plans, and programs.
- Ensure the defense readiness capability of public highway infrastructure and establish policy on how DOD uses the public highway system.

We work with the Military Services, MACOM's, military installations, ports, US Department of Transportation, US Federal Highway Administration, the American Association of State Highway and Transportation Officials (AASHTO), State transportation departments, and Congress to accomplish these goals.

<http://www.tea.army.mil/DODProg/HND/Systems.htm>

Data for vehicles with more than six axels can be found through SDDC web page



Public Highways in the United States States, counties and cities are responsible for vehicle operations on their highways, including movement on the Dwight D. Eisenhower System of Interstate and Defense Highways. Limitations on dimensions, weight and/or other characteristics of vehicle movement over roads and bridges are necessary to ensure the safe passage and prevent damage to highway infrastructure. Other limitations, including hours of movement for oversize/overweight, or other shipments, are predicated on traffic congestion periods and hazardous operating conditions. Limitations are determined by each jurisdiction and can vary considerably. It is imperative that the military services comply with all size and weight ordinances.

Publications:

- [Highway Systems Brochure \(529 KB\)](#)
- [Public Lands Highways \(Aug 03\) Brochure \(297 KB\)](#)
- [Military Installations Roads Brochure \(1,824 KB\)](#)
- [HND Briefing \(11.36 MB\)](#)
- [Directory of Highway Permit and MOBCON Officials](#)
- [Emergency Relief for Federally Owned Roads \(ERFO\) Program](#)
- [Heavy Equipment Transporter System \(HETS\) Bridge Analysis Study](#)
- 16' Vertical Clearance Urban Areas

AKO LOGIN REQUIRED

Data for vehicles with more than six axels can be found through SDDC web page

ROAD MOVEMENT CALCULATIONSTIME, DISTANCE, AND RATE FORMULASTO FIND:TIME:

DISTANCE (HOW FAR YOU ARE TRAVELING) IN MILES *TIMES 60 DIVIDED* BY YOUR "RATE OF MARCH"
(HOW FAST YOU ARE GOING)

$$\text{TIME} = \frac{\text{Distance to travel in (miles)} \times 60}{\text{Rate of march (MPH)}} = \text{Travel time in minutes}$$

DISTANCE:

MULTIPLY THE *RATE* BY THE *TIME* (IN MINUTES) AND THEN *DIVIDE* BY 60 TO CONVERT TO MPH/KPH

$$\frac{\text{RATE} \times \text{TIME}}{60}$$

RATE:

DIVIDE THE DISTANCE BY THE TIME (IN MINUTES), THEN *MULTIPLY* BY 60 TO CONVERT TO MPH/KPH
(ROUND UP)

$$\text{RATE} = \frac{\text{DISTANCE}}{\text{TIME}} \times 60$$

ALWAYS ROUND UP FOR TIME, DISTANCE AND RATE FORMULAS

DENSITY FORMULA

$$\frac{1760}{\text{veh gap} + \text{avg veh length in yards}} \leftarrow \text{ROUND RATHER THAN ALWAYS ROUND UP}$$

CALCULATING THE *AVERAGE VEHICLE LENGTH IN YARDS:*

STEP 1: Use TB 55-46-1 to find the length of vehicles. NOTE that all vehicle lengths are given in inches (note unions)

STEP 2: Add all vehicle lengths together

STEP 3: Divide by the number of vehicles

STEP 4: Divide the average length (given in inches) by 36 (*because there are 36 inches in 1 yard*) (ROUND UP)

TO FIND DENSITY:

1. Add the vehicle gap in yards to the average vehicle length in yards
2. Divide 1760 yards by total of vehicle gap and vehicle length in yards (ROUND)

PASS TIME FORMULA

$$\frac{\text{\# of vehicles} \times 60}{\text{Density} \times \text{Rate}} + \text{Time Gaps}$$

TO FIND PASS TIME:

1. Multiply the total number of Vehicles by 60 (**60 is a constant**)
2. Multiply the Density by the Rate
3. Divide (# of Vehicles times 60) by (Density times Rate)
4. **ROUND UP** the answer and **ADD TIME GAPS**

ALWAYS ROUND UP FOR PASS TIME

ROAD MOVEMENT TABLE

1. Complete the **ETA** column **first**
2. Complete the **ETD** row **second**
3. Pass time is only added across the row with break (to get ETD)
4. Breaks are added to both, column **and** row

	ETA		+	+		ETD
		break	pass time	=		
1	2					
SP		+	+	=		
+ break @ SP						
+ travel time						
=CP1		+	+	=		
+ break @ CP1						
+ travel time						
=CP2		+	+	=		
+ break @ CP2						
+ travel time						
=CP3		+	+	=		
+ break @ CP3						
+ travel time						
=CP4		+	+	=		
+ break @ CP4						
+ travel time						
=CP5		+	+	=		
+ break @ CP5						
+ travel time						
=CP6		+	+	=		
+ break @ CP6						
+ travel time						
=RP		+	+	=		

	ETA	+			+		ETD
	2 →	break			pass time	=	
SP 1		+		+		=	
+ break @ SP							
+ travel time							
= CP1		+		+		=	
+ break @ CP1							
+ travel time							
= CP2		+		+		=	
+ break @ CP2							
+ travel time							
= CP3		+		+		=	
+ break @ CP3							
+ travel time							
= CP4		+		+		=	
+ break @ CP4							
+ travel time							
= CP5		+		+		=	
+ break @ CP5							
+ travel time							
= CP6		+		+		=	
+ break @ CP6							
+ travel time							
= RP		+		+		=	

	ETA	+			+		ETD
	2 →	break			pass time	=	
SP 1		+		+		=	
+ break @ SP							
+ travel time							
= CP1		+		+		=	
+ break @ CP1							
+ travel time							
= CP2		+		+		=	
+ break @ CP2							
+ travel time							
= CP3		+		+		=	
+ break @ CP3							
+ travel time							
= CP4		+		+		=	
+ break @ CP4							
+ travel time							
= CP5		+		+		=	
+ break @ CP5							
+ travel time							
= CP6		+		+		=	
+ break @ CP6							
+ travel time							
= RP		+		+		=	

	ETA	+			+		ETD
	2 →	break			pass time	=	
SP 1		+		+		=	
+ break @ SP							
+ travel time							
= CP1		+		+		=	
+ break @ CP1							
+ travel time							
= CP2		+		+		=	
+ break @ CP2							
+ travel time							
= CP3		+		+		=	
+ break @ CP3							
+ travel time							
= CP4		+		+		=	
+ break @ CP4							
+ travel time							
= CP5		+		+		=	
+ break @ CP5							
+ travel time							
= CP6		+		+		=	
+ break @ CP6							
+ travel time							
= RP		+		+		=	

	ETA	+			+		ETD
	2 →	break			pass time	=	
SP 1		+		+		=	
+ break @ SP							
+ travel time							
= CP1		+		+		=	
+ break @ CP1							
+ travel time							
= CP2		+		+		=	
+ break @ CP2							
+ travel time							
= CP3		+		+		=	
+ break @ CP3							
+ travel time							
= CP4		+		+		=	
+ break @ CP4							
+ travel time							
= CP5		+		+		=	
+ break @ CP5							
+ travel time							
= CP6		+		+		=	
+ break @ CP6							
+ travel time							
= RP		+		+		=	

U.S. Army Transportation School
Deployment and Deployment Systems Department
Strategic Deployment Division

“CONVOY CALCULATIONS AND FORMS WORKSHEETS”
Classroom Exercises

Example: Density Computation (from lesson slide)

You have 10 vehicles in a convoy. Find their lengths in inches as listed in TB 55-46-1:

- | | |
|---------------------|---------------|
| 1. M915 / M131A4C - | 6. M929A2 - |
| 2. M35A2C / M149 - | 7. M931A2 - |
| 3. M931 / M871 - | 8. M998 - |
| 4. M984A1 | 9. M923A2 - |
| 5. M35A2C - | 10. M109WWN - |

Add all vehicle lengths: _____ inches

Classroom Exercise: First Requirement

18. ETA AND ETD AT STATE LINES, MAJOR ROAD JUNCTIONS, MAJOR BRIDGES AND TUNNELS, METROPOLITAN AREAS AND OVERNIGHT HALT SITES. (Continue on a separate sheet if additional space is required)

a. LOCATION	b. ETA	c. DATE	d. ETD	e. DATE
SP				
CP1				
CP2				
RP				

Prepare DD FORM 1265 Block 18

18. **ETA AND ETD AT STATE LINES, MAJOR ROAD JUNCTIONS, MAJOR BRIDGES AND TUNNELS, METROPOLITAN AREAS AND OVERNIGHT HALT SITES.** (Continue on a separate sheet if additional space is required)

a. LOCATION	b. ETA	c. DATE	d. ETD	e. DATE
SP	1400 + 60 (Time Dist) + 0 (Brk at SP)	<div>COMPLETE ETA COLUMN FIRST!!!!</div>		
CP1	1500 + 15 (Time Dist) + 15 (Brk at CP1)			
CP2	1530 + 30 (Time Dist) + 0 (Brk at CP2)			
RP	1600			

18. **ETA AND ETD AT STATE LINES, MAJOR ROAD JUNCTIONS, MAJOR BRIDGES AND TUNNELS, METROPOLITAN AREAS AND OVERNIGHT HALT SITES.** (Continue on a separate sheet if additional space is required)

a. LOCATION	b. ETA	c. DATE	d. ETD	e. DATE
SP	1400 →	+ 2 (Pass Time) + 0 (Brk at SP)	→ 1402	
CP1	1500 →	+ 2 (Pass Time) + 15 (Brk at CP1)	→ 1517	
CP2	1530 →	+ 2 (Pass Time) + 0 (Brk at CP2)	→ 1532	
RP	1600 →	+ 2 (Pass Time) + 0 (Brk at RP)	→ 1602	

Classroom Exercise: Second Requirement**INFORMATION GIVEN**

Number of Vehicles: 40
 Rate of March: 40 mph
 Density: 20 VPM
 Time Gap: 10 minutes
 Break at CP1: 20 minutes
 Start Time: 1300 hrs
 SP to CP1 60 miles
 CP1 to CP2 40 miles
 CP2 to CP3 60 miles
 CP3 to RP 20 miles

DETERMINE

* TIME DISTANCES

* PASS TIME

* ETA/ETD FOR ALL POINTS

USE EXAMPLE FORM
BELOW

18. ETA AND ETD AT STATE LINES, MAJOR ROAD JUNCTIONS, MAJOR BRIDGES AND TUNNELS, METROPOLITAN AREAS AND OVERNIGHT HALT SITES. (continue on a separate sheet if additional space is required)

a. LOCATION	b. ETA	c. DATE	d. ETD	e. DATE

SECTION II - VEHICLE AND LOAD DATA									
DESCRIPTION a.	TYPE (2-ton etc) b.	NO. OF VEHS c.	REG NO. d.	HEIGHT e.	WIDTH f.	LENGTH g.	WEIGHT h.		
12. VEHICLE									
(1) TRUCK							(Empty)		
(2) TRUCK TRACTOR							(Empty)		
(3) TRAILER							(Empty)		
(4) SEMI-TRAILER							(Empty)		
(5) OTHER (specify)							(Empty)		
13. LOAD									
14. OVERALL (Vehicle and Load)									
17. NUMBER OF AXLES <div> <div>1</div> <div>2</div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div> <div> <div>A</div> <div>B</div> <div>C</div> <div>D</div> <div>E</div> <div>F</div> <div>G</div> <div>H</div> </div>									
	AXLE 1 a.	AXLE 2 b.	AXLE 3 c.	AXLE 4 d.	AXLE 5 e.	AXLE 6 f.	AXLE 7 g.	AXLE 8 h.	TOTAL i.
18. NUMBER OF TIRES									
19. TIRE WIDTH (inches)									
20. TIRE SIZES									
21. AXLE LOAD (Empty)									
22. AXLE LOAD (Loaded)									
23. AXLE SPACING (See item 14 for identification)	A SPACING	B SPACING	C SPACING	D SPACING	E SPACING	F SPACING	G SPACING	H SPACING	

REQUEST FOR CONVOY CLEARANCE		1. CONVOY NUMBER	2. UIC WFSPAA	3. DATE (YYYYMMDD) 2001/08/18	
SECTION I - GENERAL					
4. ORGANIZATION 316th Trans Co (Lt/Mdm Trk)		5. STATION Bldg 1234, Fort Story, VA 23459		6. CONVOY COMMANDER John J. Jones 2LT	
7. PERSONNEL STRENGTH		8. POINT OF ORIGIN		9. DESTINATION	
a. OFFICER 1	b. ENLISTED 47	Fort Story, VA		Port of Charleston, SC	
10. DATE AND TIME 08/28/01 0700		b. ARRIVAL 08/28/01 1641	11. RATE OF MARCH 45 MPH, 50 max catch-up		
SECTION II - CONVOY COMPOSITION					
12. NUMBER OF EACH TYPE OF VEHICLE AND DESCRIPTION <i>(Include towed equipment)</i> 19 ea M923 Trk Cgo D/S 5 Ton 2 ea M998 Trk Util Cgo/Tpr Carr 1 ea M96A2 Truck Tractor 6x6 towing 1 ea M870A1 Stlr Low Bed 40 Ton					
13. TOTAL NUMBER OF VEHICLES 22	14. NUMBER OF OVERSIZE/ OVERWEIGHT VEHICLES 1	15a. NO. OF SERIALS NA	b. TIME INTERVAL NA	16a. NO. OF MARCH UNITS 3	b. TIME INTERVAL 10
SECTION III - ROUTE DATA					
17. PROPOSED ROUTING <i>(Indicate US Routes, State Routes, etc.)</i> Ft Story to I 264 W, US 58 W, I 95 S, I 26 E, US 17 S to Port of Charleston					
18. ETA AND ETD AT STATE LINES, MAJOR ROAD JUNCTIONS, MAJOR BRIDGES AND TUNNELS, METROPOLITAN AREAS AND OVERNIGHT HALT SITES <i>(Continue on a separate sheet if additional space is required)</i>					
a. LOCATION		b. ETA	c. DATE (YYYYMMDD)	d. ETD	e. DATE (YYYYMMDD)
SP (I 264 W / US 58 W) [Fort Story]		0700	2001/08/28	0723	2001/08/28
CP1 (US 58 W / I 95 S [Emporia, VA])		0800		0828	
CP2 (I 95 S / VA - NC State Line)		1015		1038	
CP3 (I 95 S / US 421 [Dunn, NC])		1215		1338	
CP4 (I 95 S / NC - SC State Line)		1400		1423	
CP5 (I 95 S / I 26 E [Manning SC])		1600		1623	
RP (I 26 E / US 17 S [Charleston SC])		1618		1641	
SECTION IV - LOGISTICAL DATA					
19. BRIEF GENERAL DESCRIPTION OF CARGO <i>(Brief general description; i.e., organizational impediments, etc.) (Within security limitations)</i> List general description of cargo. Examples: <ul style="list-style-type: none"> • Troops with or without weapons • Any sensitive documents • Tanker filled or empty • Hazardous Cargo 					

20. ARE EXPLOSIVES TO BE TRANSPORTED?		<input checked="" type="checkbox"/> YES		<input type="checkbox"/> NO (If YES, describe below)	
a. CLASS	b. AMOUNT	c. DESCRIPTION		d. VEHICLES TO BE USED	
1.3C	60 lbs	Cartridges, for small arms, blank		(1) NO.	(2) TYPE
				1	1 1/2 ton Trk
21. STATEMENT WHY EXPLOSIVES CANNOT BE TRANSPORTED COMMERCIALY (Movements involving explosives and/or other dangerous articles are required to comply with all applicable regulations or directives) Time constraints do not allow commercial shipping					
22. LOGISTICAL SUPPORT REQUIRED AT OVERNIGHT HALT SITES? <input type="checkbox"/> YES <input type="checkbox"/> NO (If YES, complete the following) (Use separate sheet if additional space is required)					
a. DATE (YYYYMMDD)	b. INSTALLATION	c. GAS (gals)	d. OIL (gals)	e. RATIONS	f. BILLETS
Block 22: Logistical Support Required at Overnight Halt Sites? Yes or No If yes, complete the following: a: DATE (YYYY/MM/DD) b: Installation c: Gas (gals) d: Oil (gals) e: Rations f: Billets g: Other					
23. REMARKS This block is to be used to inform the chain of command of any unique convoy requirements. - Planned location of fuel and meal halts. - Types of radios - Specific support requirements. - List each oversized/over weight vehicle (truck or truck trailer combinations) with load description. Note: Enter name, rank, telephone and fax number of convoy point of contact (POC) during normal duty hours.					
24. REQUESTING AGENCY 316th Trans Co			25. APPROVING AGENCY		
26. REQUESTED BY a. NAME (Last, First, Middle, Initial) Chestnut Charles C.			27. APPROVED BY a. NAME (Last, First, Middle, Initial)		
b. GRADE 1LT	c. TITLE Unit Movement Officer		b. GRADE	c. TITLE	
d. SIGNATURE Charles C. Chestnut		e. DATE (YYYYMMDD) 2001/08/18	d. SIGNATURE		e. DATE (YYYYMMDD)
INSTRUCTIONS: In cases where bona-fide emergencies exist, the information contained on DD Form 1265 and DD Form 1266 may be transmitted to the appropriate headquarters by telephone or electronic transmission. In this event, reference will be made to item numbers in the sequence in which they appear on the form. Items which do not apply will be so indicated.					

REQUEST FOR CONVOY CLEARANCE		1. CONVOY NUMBER		2. UIC		3. DATE (YYYYMMDD)	
SECTION I - GENERAL							
4. ORGANIZATION		5. STATION			6. CONVOY COMMANDER		
7. PERSONNEL STRENGTH		8. POINT OF ORIGIN			9. DESTINATION		
a. OFFICER	b. ENLISTED						
10. DATE AND TIME	a. DEPARTURE	b. ARRIVAL	11. RATE OF MARCH				
SECTION II - CONVOY COMPOSITION							
12. NUMBER OF EACH TYPE OF VEHICLE AND DESCRIPTION <i>(Include towed equipment)</i>							
13. TOTAL NUMBER OF VEHICLES		14. NUMBER OF OVERSIZE/ OVERWEIGHT VEHICLES	15a. NO. OF SERIALS	b. TIME INTERVAL	16a. NO. OF MARCH UNITS	b. TIME INTERVAL	
SECTION III - ROUTE DATA							
17. PROPOSED ROUTING <i>(Indicate US Routes, State Routes, etc.)</i>							
18. ETA AND ETD AT STATE LINES, MAJOR ROAD JUNCTIONS, MAJOR BRIDGES AND TUNNELS, METROPOLITAN AREAS AND OVERNIGHT HALT SITES <i>(Continue on a separate sheet if additional space is required)</i>							
a. LOCATION		b. ETA	c. DATE (YYYYMMDD)	d. ETD	e. DATE (YYYYMMDD)		
SECTION IV - LOGISTICAL DATA							
19. BRIEF GENERAL DESCRIPTION OF CARGO <i>(Brief general description; i.e., organizational impediments, etc.) (Within security limitations)</i>							

20. ARE EXPLOSIVES TO BE TRANSPORTED?			<input type="checkbox"/> YES	<input type="checkbox"/> NO <i>(If YES, describe below)</i>
a. CLASS	b. AMOUNT	c. DESCRIPTION	d. VEHICLES TO BE USED	
			(1) NO.	(2) TYPE

21. STATEMENT WHY EXPLOSIVES CANNOT BE TRANSPORTED COMMERCIALY *(Movements involving explosives and/or other dangerous articles are required to comply with all applicable regulations or directives)*

22. LOGISTICAL SUPPORT REQUIRED AT OVERNIGHT HALT SITES?		<input type="checkbox"/> YES	<input type="checkbox"/> NO			
<i>(If YES, complete the following) (Use separate sheet if additional space is required)</i>						
a. DATE (YYYYMMDD)	b. INSTALLATION	c. GAS (gals)	d. OIL (gals)	e. RATIONS	f. BILLETS	g. OTHER

23. REMARKS

24. REQUESTING AGENCY		25. APPROVING AGENCY	
26. REQUESTED BY		27. APPROVED BY	
a. NAME <i>(Last, First, Middle Initial)</i>		a. NAME <i>(Last, First, Middle Initial)</i>	
b. GRADE	c. TITLE	b. GRADE	c. TITLE
d. SIGNATURE	e. DATE (YYYYMMDD)	d. SIGNATURE	e. DATE (YYYYMMDD)

INSTRUCTIONS: In cases where bona-fide emergencies exist, the information contained on DD Form 1265 and DD Form 1266 may be transmitted to the appropriate headquarters by telephone or electronic transmission. In this event, reference will be made to item numbers in the sequence in which they appear on the form. Items which do not apply will be so indicated.

PART II. STATUTORY WEIGHT & SIZE LIMITS FOR VIRGINIA

24 VAC 30-111-40. Interstate system and designated highways.

If the dimensions of the vehicle combination or nondivisible load, or both, exceed one of the following statutory limitations listed below, a hauling permit is required.

Single Axle Weight: 20,000 pounds or 650 pounds per inch of tire (width) in contact with the surface of the highway

Tandem Axle Weight: 34,000 pounds (more than 40 inches but not more than 96 inches Axle centers)

Gross Weight: See 24 VAC 30-111-60. Legal weight allowed based on axle spacing

Width: 8 feet 6 inches (excluding mirrors and safety devices)

Height: 13 feet 6 inches

Length: Trailer – 48 feet

Semitrailer – 53 feet including load

Twin trailers – 28 ½ feet

Tractor truck semi trailer combinations – No overall length restrictions

Automobile and watercraft transporters – 75 feet plus 3 – foot overhang to front and 4 – foot overhang to rear

Tractor trucks shall not have more than one semitrailer attached.

Trucks shall not have more than one trailer attached.

Three motor vehicles shall be drawn only if coupled together by a saddle mount device.

24 VAC 30-111-50. Primary and secondary systems.

If the dimensions of the vehicle combination or nondivisible load, or both, exceed one of the following statutory limitations listed below, a hauling permit is required.

Single Axle Weight: 20,000 pounds or 650 pounds per inch of tire (width) in contact with the surface of the highway

Tandem Axle Weight: 34,000 pounds (more than 40 inches but not more than 96 inches between axle centers)

Gross Weight: See 24 VAC 30-111-60. Legal weight allowed based on axle spacing

Width: 8 feet excluding mirrors. Safety devices not to exceed 3 inches on each side

Height: 13 feet 6 inches

Length: Truck – 40 feet excluding load

Semitrailer – 48 feet

Twin trailers – 28 ½ feet

Tractor semitrailer combination – 65 feet including load

Combination of a towing vehicle and any manufactured housing – 60 feet including load and coupling

24 VAC 30-111-60. Legal weight allowed based on axle spacing.

Legal weight in pounds for any group of two or more consecutive axles. A hauling permit is required when a vehicle configuration exceeds the weight limitations according to axle spacing.

“L” is defined as the distance in feet between the extremes of any group of two or more consecutive axles.

<u>“L”</u>	<u>2 axles</u>	<u>3 axles</u>	<u>4 axles</u>	<u>5 axles</u>	<u>6 axles</u>	<u>7 or more axles</u>
4	34,000					
5	34,000					
6	34,000					
7	34,000					
8	34,000					
9	39,000	42,500				
10	40,000	43,500				
11		44,000				
12		45,000	50,000			
13		45,500	50,500			
14		46,500	51,500			
15		47,000	52,000			
16		48,000	52,500	58,000		
17		48,500	53,500	58,500		
18		49,500	54,000	59,000		
19		50,000	54,500	60,000		
20		51,000	55,500	60,500	66,000	
21		51,500	56,000	61,000	66,500	
22		52,500	56,500	61,500	67,000	
23		53,000	57,500	62,500	68,000	
24		54,000	58,000	63,000	68,500	74,000
25		54,500	58,500	63,500	69,000	74,500
26		55,500	59,500	64,000	69,500	75,000
27		56,000	60,000	65,000	70,000	75,500
28		57,000	60,500	65,500	71,000	76,500
29		57,500	61,500	66,000	71,500	77,000
30		58,500	62,000	66,500	72,000	77,500
31		59,000	62,500	67,500	72,500	78,000
32		60,000	63,500	68,000	73,000	78,500
33			64,000	68,500	74,000	79,000
34			64,500	69,000	74,500	80,000
35			65,500	70,000	75,000	
36			66,000	70,500	75,500	
37			66,500	71,000	76,000	
38			67,500	72,000	77,000	
39			68,000	72,500	77,500	
40			68,500	73,000	78,000	
41			69,500	73,500	78,500	
42			70,000	74,000	79,000	
43			70,500	75,000	80,000	
44			71,500	75,500		
45			72,000	76,000		
46			72,500	76,500		
47			73,500	77,500		
48			74,000	78,000		
49			74,500	78,500		
50			75,500	79,000		
51			76,000	80,000		

24 VAC 30-111-70. Maximum weight allowed by permit based on axle spacing.

Maximum weight in pounds according to vehicle axle spacings allowed by permit without requiring an engineering review from the Structure and Bridge Division for any group of two or more consecutive axles. All vehicle configurations shall be reduced to the smallest dimensions possible and those exceeding the specifications identified in this chart will require an engineering review before a permit can be issued.

“L” is defined as the distance in feet between extremes of any group of two or more consecutive axles.

<u>“L”</u>	<u>2 axles</u>	<u>3 axles</u>	<u>4 axles</u>	<u>5 axles</u>	<u>6 axles</u>	<u>7 or more axles</u>
4	44,000					
5	44,000					
6	44,000					
7	44,000					
8	48,000	53500				
9		54500				
10		55000				
11		56000				
12		56500	63000			
13		57500	63500			
14		58000	64500			
15		59000	65000			
16		59000	65500	72,500		
17		59500	66500	73,000		
18		60500	67000	74,000		
19		61000	67500	74,500		
20		62000	68500	75,000	82,000	
21		62500	69000	75,500	82,500	
22		63500	69500	76,500	83,000	
23		64000	70500	77,000	84,000	
24		65000	71000	77,500	84,500	
25		65500	71500	78,000	85,000	
26		66500	72500	79,000	85,500	91,500
27		67000	73000	79,500	86,000	92,000
28		68000	73500	80,000	87,000	92,500
29		68500	74500	80,500	87,500	93,000
30		69500	75000	81,500	88,000	94,000
31		70000	75500	82,000	88,500	94,500
32		71000	76500	82,500	89,000	95,000
33		71500	77000	83,000	90,000	95,500
34			77500	84,000	90,500	96,000
35			78500	84,500	91,000	97,000
36			79000	85,000	91,500	97,500
37			79500	85,500	92,000	98,000
38			80500	86,500	93,000	98,500
39			81000	87,000	93,500	99,000
40			81500	87,500	94,000	99,500
41			82500	88,000	94,500	100,500
42			83000	89,000	95,000	101,000
43			83500	89,500	96,000	101,500
44			84500	90,000	96,500	102,000
45			85000	90,500	97,000	102,500
46			85500	91,500	97,500	103,000
47			86500	92,000	98,000	104,000
48			87000	92,500	99,000	105,000
49			87500	93,000	99,500	105,500
50			88500	94,000	100,000	106,000
51			89000	94,500	100,500	106,500
52			89500	95,000	101,000	107,500
53			90500	95,500	102,000	108,000
54			91000	96,500	102,500	108,500
55			91500	97,000	103,000	109,500
56			92500	97,500	104,000	109,500
57			93000	98,000	104,500	110,000
58			94000	99,000	105,000	111,000
59			94500	99,500	105,500	111,500
60			95000	100,000	106,000	112,500
61			96000	101,000	106,500	113,000
62				101,500	107,000	113,500
63				102,000	108,000	114,500
64				102,500	108,500	115,000

24 VAC 30-111-80. Maximum Axle Weights.

Single	24,000 or 850 pounds per inch, width of tire measured in contact with the surface of the road.
Tandem	refer to Axle Spacing Chart (24 VAC 30-111-70)
Tri-Axle and Quad-Axle groups	– refer to Axle Spacing Chart (24 VAC 30-111-70)

PART III.
DESCRIPTIONS, REQUIREMENTS AND LIMITATIONS OF
SPECIAL PERMITS AVAILABLE.

A general blanket permit allows frequent movements within a specified time frame on Designated or all unrestricted routes, or both, unless posted otherwise, in Virginia. General blanket Permits all be issued on a case-by case basis and only after an appropriate engineering review has been complete to insure the vehicle configuration will not damage bridges and structures throughout the state or along the designated route. Results of the engineering review may render the vehicle configuration ineligible for a general blanket permit. Requests for general blanket permits should be made at least ten work days prior to the anticipated date of movement.

General blanket permits may only be obtained through the Virginia Department of Transportation Central Office and the cost is \$45 for a one-year permit and \$85 for a two-year permit. The Department of Motor Vehicles may assess a monthly fee for each mile the vehicle operates under the blanket permit. The fee is \$.10 per mile and is charge for vehicles or equipment that cannot be licensed in Virginia due to the vehicle or equipment size exceeding statutory limitations. The applicant will pay this fee directly to the Motor Carrier Division, Department of Motor Vehicles, 2300 West Broad Street, Richmond, Virginia 23219.

24 VAC 30-111-100. Restricted blanket permit.

A restricted blanket permit may be issued when an engineering review reveals that the vehicle's configuration does not warrant unrestricted travel throughout Virginia and therefore should not be granted a general blanket permit. Restricted blanket permits can be issued for a period not to exceed six months. Results of the engineering review may render the vehicle configuration ineligible to receive a restricted blanket permit. Request for restricted blanket permits should be made at least 10 workdays prior to the anticipated date of movement.

Restricted blanket permits may be obtained through the VDOT Central Office and the cost is \$45.00. The Department of Motor Vehicles may assess a monthly fee for each mile the vehicle operates under the restricted blanket permit. The fee is \$.10 a mile and is charge for vehicles that cannot be licensed in Virgin due to vehicle or equipment size exceeding statutory limitations.

If the applicant's vehicle configuration exceeds any of the parameters listed and an engineering review has determined the configuration ineligible to operate under a general or restricted blanket permit, the applicant may apply for a single trip or superload permit.

Width	14 feet (Manufactured housing – 14 feet plus 12-inches side overhang)
Weight	See 24 VAC 30-111-70. Maximum weight allowed by permit based on axle spacings
Length	100 feet
Height	14 feet

24 VAC 30-111-110. Single trip permit.

A single trip permits is issued to cover one movement between two specific points within a 13-day period. The 13-day travel window is allowed to give the transporter flexibility in case of inclement weather or unforeseen circumstances beyond the mover's control. Single trip permits may be obtained through, a permit transmission company, the Virginia Department of Transportation central office and any Virginia Department of Transportation district or residency Office.

Single trip permits are \$12 each. Vehicles or equipment that cannot be licensed in Virginia because they exceed statutory size or weight limitations will pay the single permit price plus a fee of \$.10 per mile for each mile traveled under the authority of the permit. The fee of \$.10 per mile is collected prior to the issuance of the single trip permit.

If vehicle configuration exceeds any of the parameters listed below, the applicant shall apply for a superload permit.

Height: 15 feet
 Width: 14 feet
 Length: 150 feet. Note: Fairfax County: 100 feet on non-interstate routes. Virginia Beach, Norfolk, Portsmouth and Chesapeake: 100 feet to a job site.
 Gross Weight: 130,000 pounds – secondary and primary
 150,100 pounds – interstate

24 VAC 30-111-120. Superload permit.

A. A superload permit is required for all movements that exceed the maximum parameters established for single trip hauling permits. Movements with a width in excess of 14 feet will be required to travel on a specific date. Superload permits will be issued on a case by case basis after an appropriate engineering review has been completed to ensure the applicant's vehicle configuration will not damage bridges and structures on the designated route of travel. Result of the engineering review may render the applicant's vehicle configuration ineligible for movement along Virginia's highways.

Superload permits can only be obtained through the Virginia Department of Transportation central office. Requests for superload permits should be made at least 10 workdays prior to the anticipated date of movement.

Superload permits cost \$12 each, plus a \$4.00 research fee per structure crossed. All Structures on the interstate system will count as one structure. Vehicles or equipment that cannot be licensed in Virginia because they exceed statutory size or weight limitations will also incur an additional charge of \$.10 per mile. The fee of \$.10 per mile is collected prior to the issuance of the superload permit.

REQUEST FOR SPECIAL HAULING PERMIT		1. CONVOY NUMBER	2. UIC WADSAA	3. DATE (YYYYMMDD) 0000/08/28			
SECTION I - GENERAL							
4. ORGANIZATION 100th Trans Co (Mdm Trk)		5. STATION Building 1234, Fort Eustis, VA 23604		6. DATE OF MOVEMENT (YYYYMMDD)			
				a. STARTING 0000/08/28		b. COMPLETION 0000/08/28	
7. POINT OF ORIGIN Ft Eustis, VA				8. DESTINATION CAMP A.P Hill, VA			
9. ARRIVAL AT STATE LINES N/A				10. ROUTING (Stipulate US Routes, State Routes, etc.)			
a. DATE (YYYYMMDD)	b. TIME	c. STATE LINE		Ft Eustis to I 64 N, S 168 N, S 33 N, I 95 S, S 301 W to Camp A. P. Hill			
11. ESCORT REQUIREMENTS 2 ea M998 Trk Util Cgo/Tpr Carr (one front/one rear)							
SECTION II - VEHICLE AND LOAD DATA							
DESCRIPTION a.	TYPE (2-ton, etc.) b.	NO. OF VEHICLES c.	REGISTRATION NUMBER d.	HEIGHT e.	WIDTH f.	LENGTH g.	WEIGHT h.
12. VEHICLE							
(1) TRUCK							(Empty)
(2) TRUCK-TRACTOR M915	25 ton	1	1234	131	123	269	(Empty) 18,621
(3) TRAILER							(Empty)
(4) SEMI-TRAILER M872	34 ton	1	9872	58 106	96	490	(Empty) 17,390
(5) OTHER (Specify)							(Empty)
13. LOAD MILVAN				149	96	242	30,000
14. OVERALL (Vehicle and load)				207	123	659	66,011
15. DESCRIPTION OF LOAD (Brief general description: Organization impediments, etc.) (Within security limitations)							
One MILVAN							
16. LOAD OVERHANG							
a. FRONT NA	b. REAR NA	c. LEFT SIDE NA	d. RIGHT SIDE NA				

17. NUMBER OF AXLES	1 A	2 B	3 C	4 D	5 E	6 F			
	AXLE 1 a.	AXLE 2 b.	AXLE 3 c.	AXLE 4 d.	AXLE 5 e.	AXLE 6 f.	AXLE 7 g.	AXLE 8 h.	TOTAL i.
18. NUMBER OF TIRES	2	4	4	4	4	4			22
19. TIRE WIDTH (Inches)	22	44	44	44	44	44			242
20. TIRE SIZES	11 x20	11 x20	11 x20	11 x20	11 x20	11 x20			
21. AXLE LOAD (Empty)	2881	7922	7922	5672	5672	5672			36011
22. AXLE LOAD (Loaded)	5281	14522	14522	10562	10562	10562			66011
23. AXLE SPACING (See Item 17 for identification)	A SPACING 98	B SPACING 48	C SPACING 100	D SPACING 48	E SPACING 48	F SPACING	G SPACING	H SPACING	
24. REMARKS									
<h1>Remarks</h1>									
25. MOVEMENT BY HIGHWAY IS									
<input checked="" type="checkbox"/> ESSENTIAL TO NATIONAL DEFENSE <input type="checkbox"/> IN THE INTEREST OF NATIONAL DEFENSE									
26. REQUESTING AGENCY					27. APPROVING AGENCY				
100th Trans Co (Mdm Trk)					<div style="border: 2px solid black; padding: 10px; text-align: center;"> Approved through DMC (SMCC) in convoy's state of origin or ITO/ UMC </div>				
28. REQUESTED BY									
a. NAME (Last, First, Middle Initial) Chestnut Charles C.									
b. GRADE 1LT									
c. TITLE Unit Movement Officer					29. APPROVED BY				
d. SIGNATURE Charles C. Chestnut					e. DATE (YYYYMMDD) 2001/08/18				
INSTRUCTIONS									
GENERAL: DD Form 1266, "Request for Special Hauling Permit" will be used to obtain special hauling permits for the movement of over-size/overweight vehicles over public highways when accompanying a convoy or when traveling separately. This form, in duplicate and accompanied by letter of transmittal, will be forwarded through the local transportation officer so as to reach the appropriate headquarters not less than ten (10) working days prior to the starting date of the movement. Letters of transmittal will contain complete itinerary and explanation of the movement. One (1) letter of transmittal is sufficient when several DD Forms 1265 and 1266 involving one (1) movement are forwarded to the appropriate headquarters. In cases where bona-fide emergencies exist, the information contained in this form and DD Form 1265 may be transmitted to the appropriate headquarters by telephone or electronic transmission. In this event, reference will be made to item numbers in the sequence in which they appear on the forms. Items which do not apply will be so indicated.					SPECIFIC: Item 12.a, b., c., and d. - Complete nomenclature of vehicles involved. More than one unit may be included, provided units are identical in equipment, load characteristics, routing and movement date. Total number of units shall be indicated prominently. Item 12.e. - Note all units other than standard highway vehicles; road equipment, guns, etc. Item 12.d. - Indicate the registration number for each unit or combination of units. Use additional page if required. Item 17 - Indicate appropriate number of axles by inserting number in proper circles. Block out circles not applicable. Item 24 - For movement through the District of Columbia, include name of manufacturer of equipment.				

REQUEST FOR SPECIAL HAULING PERMIT				1. CONVOY NUMBER		2. UIC		3. DATE (YYYYMMDD)		
SECTION I - GENERAL										
4. ORGANIZATION				5. STATION				6. DATE OF MOVEMENT (YYYYMMDD)		
								a. STARTING		b. COMPLETION
7. POINT OF ORIGIN					8. DESTINATION					
9. ARRIVAL AT STATE LINES					10. ROUTING <i>(Stipulate US Routes, State Routes, etc.)</i>					
a. DATE (YYYYMMDD)		b. TIME		c. STATE LINE						
11. ESCORT REQUIREMENTS										
SECTION II - VEHICLE AND LOAD DATA										
DESCRIPTION a.		TYPE <i>(2-ton, etc.)</i> b.	NO. OF VEHICLES c.	REGISTRATION NUMBER d.	HEIGHT e.	WIDTH f.	LENGTH g.	WEIGHT h.		
12. VEHICLE										
(1) TRUCK								<i>(Empty)</i>		
(2) TRUCK-TRACTOR								<i>(Empty)</i>		
(3) TRAILER								<i>(Empty)</i>		
(4) SEMI-TRAILER								<i>(Empty)</i>		
(5) OTHER <i>(Specify)</i>								<i>(Empty)</i>		
13. LOAD										
14. OVERALL <i>(Vehicle and load)</i>										
15. DESCRIPTION OF LOAD <i>(Brief general description: Organization impediments, etc.) (Within security limitations)</i>										
16. LOAD OVERHANG										
a. FRONT			b. REAR			c. LEFT SIDE		d. RIGHT SIDE		

17. NUMBER OF AXLES	<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">1</div> <div style="margin-left: 10px;">A</div>	<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">2</div> <div style="margin-left: 10px;">B</div>	<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"></div> <div style="margin-left: 10px;">C</div>	<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"></div> <div style="margin-left: 10px;">D</div>	<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"></div> <div style="margin-left: 10px;">E</div>	<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"></div> <div style="margin-left: 10px;">F</div>	<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"></div> <div style="margin-left: 10px;">G</div>	<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"></div> <div style="margin-left: 10px;">H</div>	
	AXLE 1 a.	AXLE 2 b.	AXLE 3 c.	AXLE 4 d.	AXLE 5 e.	AXLE 6 f.	AXLE 7 g.	AXLE 8 h.	TOTAL i.
18. NUMBER OF TIRES									0
19. TIRE WIDTH (Inches)									0
20. TIRE SIZES									
21. AXLE LOAD (Empty)									0
22. AXLE LOAD (Loaded)									0
23. AXLE SPACING (See Item 17 for identification)	A SPACING	B SPACING	C SPACING	D SPACING	E SPACING	F SPACING	G SPACING	H SPACING	
24. REMARKS									
25. MOVEMENT BY HIGHWAY IS									
<input type="checkbox"/> ESSENTIAL TO NATIONAL DEFENSE <input type="checkbox"/> IN THE INTEREST OF NATIONAL DEFENSE									
26. REQUESTING AGENCY					27. APPROVING AGENCY				
28. REQUESTED BY					29. APPROVED BY				
a. NAME (Last, First, Middle Initial)					a. NAME (Last, First, Middle Initial)				
b. GRADE		c. TITLE			b. GRADE		c. TITLE		
d. SIGNATURE			e. DATE (YYYYMMDD)		d. SIGNATURE			e. DATE (YYYYMMDD)	
INSTRUCTIONS									
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APPENDIX N

**MILITARY VEHICLE AXLE WEIGHT
DISTRIBUTION FORMULAS AND PERCENTAGES***

Vehicle weight scales are not always available to military field units that are moving truck convoys over CONUS public highways. Therefore, the Army has developed loaded-vehicle axle weight distribution formulas and percentages to help units prepare DD Forms 1265 and 1266. Percentages of maximum GVW are given for estimating the axle weight distribution for a loaded vehicle. Whenever possible, units should use actual axle loads obtained by weighing the loaded vehicle.

N-1. LIMITATIONS. Percentages can be used for any loaded cargo truck and tractor-semitrailer combination. However, to determine vehicle axle load distribution, the following must be available:

- TMs or vehicle data sheet for the particular cargo truck, tractor, and semitrailer.
- Weight of empty vehicle.
- Weight of payload.
- Other necessary dimensions obtained from vehicle TM or data sheet.

N-2. PROCEDURE. Follow these steps to determine axle weight distribution using the percentages in this appendix:

Step 1. Determine GVW.

Step 2. Choose applicable percentages from the table for the number of axles and type of vehicle (see Table N-1, page N-2).

Step 3. Multiply GVW by each percentage to determine various axle weight distributions.

Step 4. Record each weight.

Example: The percentage method. The GVW for an M123/M172A1 tractor-semitrailer combination is 96,500 pounds. This is a five-axle vehicle. Therefore, in the first column labeled "Number of Axles per Vehicle," find 5. To the right of 5 under "Type of Vehicle" is semitrailer and under the "Axle 1" column is 14. Multiply the GVW by 14 percent to find the front axle weight distribution. The "Axle 2" and "Axle 3" columns show 21 percent. Multiply the GVW by 21 percent to determine the weight distribution on each of the second and third axles. The "Axle 4" and "Axle 5" columns show 22 percent. Multiply the GVW by 22 percent to determine the weight distribution on each of the fourth and fifth axles. Record each axle weight distribution.

GVW for M123/M172A1 = 96,500 lb

GVW = 96,500 lb x 14 percent = 13,510 lb (front axle weight distribution)

GVW = 96,500 lb x 21 percent = 20,265 lb (2d and 3d axle weight distribution)

GVW = 96,500 lb x 22 percent = 21,230 lb (4th and 5th axle weight distribution)

*Formulas and percentages in this appendix (see Table N-1 and Figure N-1, page N-3) are used in lieu of ATA weight limits only when ATA data (see Appendix E) is not available.

Table N-1. Percentages for axle weight distribution

Number of Axles per Vehicle	Type of Vehicle	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6
3	1 1/4-ton	.38	.31	.31			
	2 1/2-ton	.32	.34	.34			
	5-ton	.26	.37	.37			
	10-ton	.24	.38	.38			
5	Semitrailer	.14	.21	.21	.22	.22	
6	Semitrailer	.08	.22	.22	.16	.16	.16

CARGO TRUCK

To find the axle weight distribution on the bogie:

$$\frac{W_2 - W_T(X_1) + W_L(X_2)}{X_3}$$

When vehicle has a bogie axle, divide W_2 by 2 to find the axle weight distribution for each axle.

$$W_1 = W_T + W_L - W_2$$

SEMITRAILER

To find the axle weight distribution on the bogie:

$$\frac{W_2 - W_T(X_1) + W_L(X_2)}{X_3}$$

Divide W_2 by the number of axles to find axle weight distribution for each axle.

$$W_K = W_T + W_L - W_2$$

NOTE: Apply W_K to tractor-truck formulas.

TRUCK TRACTOR

To find the axle weight distribution on the bogie:

$$\frac{W_2 - W_{TR}(X_1) + W_K(X_2, X_3)}{X_3}$$

Divide W_2 by 2 to find axle weight distribution for axles 2 and 3.

To find axle weight distribution on the front bogie:

$$W_1 = W_{TR} + W_K - W_2$$

LEGEND

W_1 = wt on axle 1	W_T = wt of trailer	W_{TR} = wt on truck
W_2 = wt on axle 2	W_K = wt on king pin	W_L = wt of load
C_L = center of load		

U.S. ARMY TRANSPORTATION SCHOOL
DEPLOYMENT AND DEPLOYMENT SYSTEM DEPARTMENT
STRATEGIC DEPLOYMENT TRAINING CENTER

“Convoy Calculations and Forms”

PRACTICAL EXERCISE

ACTION: Plan CONUS Convoy Operations and complete DD Forms 1265 and 1266

CONDITIONS: Given classroom instruction, class notes, FM 55-30, FM 4-01.011, FORSCOM Regulation 55-1 and TB 55-46-1

STANDARDS: Correctly plan CONUS Convoy Operations IAW doctrine

A. First Requirement:

1. You are the Unit Movement Officer for the 316th Transportation Company, Bldg 1234, Fort Story, VA, 23459 (UIC is 'WFSPAA'). Your unit is deploying to the port at Charleston, SC. It has been previously determined that if deployed, your unit will road march to Charleston, SC in two convoys. You have been tasked with preparing a DD Form 1265 for the first convoy. Using the TB 55-46-1 and the information provided, correctly complete a Request for Convoy Clearance (DD Form 1265).

- a. Personnel Strength: 4 Officer / 160 Enlisted
- b. Proposed Route: I 264 W, US 58 W, I 95 S, I 26 E, US 17 S
- c. There will be no ammunition or other hazardous materiel in this convoy
- d. Cargo will consist of general cargo, MTOE equipment
- e. Rate of March: **50 mph**, with a catch up speed of 55 mph
- f. You are the convoy commander
- g. Convoy will **depart 10 days from today's date at 0800hrs**
- h. Unit data: TOE number 17J800
- i. Arrival date and time: TBD using the following information:
 - (1) Vehicle gap: **100 yds**
 - (2) Time Gap: **10 min** (only one time gap - ie two serials ten minutes apart)

- (3) **Checkpoints** **Mileage:**
- (a) SP to CP1 = 60 miles
- (b) CP1 to CP2 = 20 miles
- (c) CP2 to CP3 = 100 miles
- (d) CP3 to CP4 = 66 miles
- (e) CP4 to CP5 = 67 miles
- (f) CP5 to CP6 = 33 miles
- (g) CP6 to RP = 52 miles

Halts:

- * 15 minute halt at CP1
- ** 10 minute halt at CP3
- *** 1 hour halt (lunch/220 gal fuel) at CP5

- (4) Vehicles to be road marched:

- (a) 5 ea M998 TRK UTIL CRG/TRP CARR
(Bumper: HQ1, A1, B1, C1, C2)

- (b) 11 ea M923 TRK CGO D/S 5 Ton towing
(Bumper: HQ3, A3, A4, B3, B4, C3, C4, C5, D3, D4, D5)

5 ea M105 TRAILER CARGO 1 ½ TON
(Bumper: HQ3T, A3T, A4T, B3T, B4T)

1 ea M149A2 TRAILER TANK WATER
(Bumper: C3T)

- (c) 1 ea M984 WWN TRK WRECKER 8 x 8
(Bumper: D6)

- (d) 2 ea M997 TRK AMB 4 LITTER 4 x 4
(Bumper: HQ4, HQ5)

- (e) 1 ea M915 TRUCK TRACTOR 6 x 4 towing
(Bumper: D8)

1 ea M872 STLR FLATBED 34 TON
(Bumper: D8T)

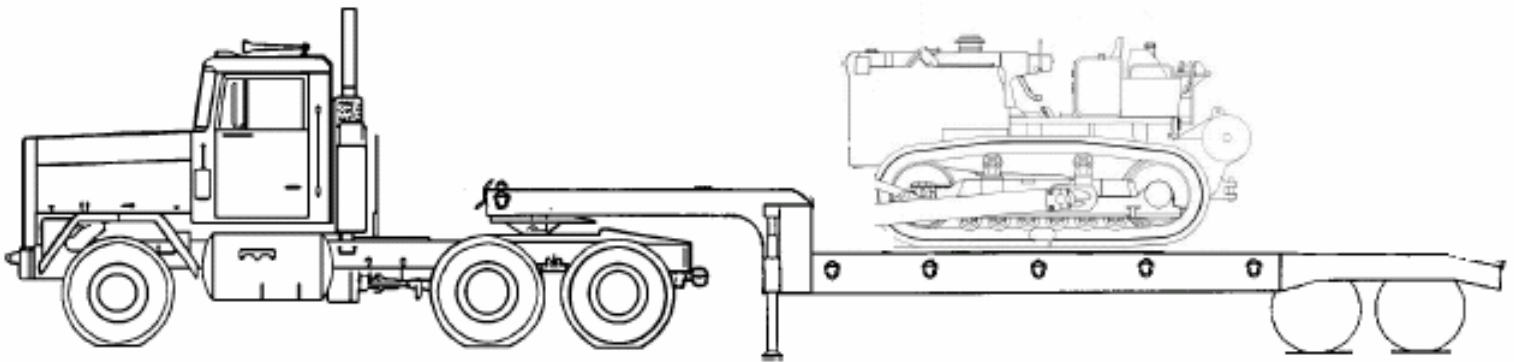
B. **Second Requirement:**

1. Prepare a Convoy Clearance Request (DD Form 1265) and Request for Special Hauling Permit (DD Form 1266) for the second convoy.

a. Equipment being road marched:

- (1) 1 ea **M915A1** Truck Tractor 6 x 4 (Operational)
(Bumper: D9) towing 1 ea **M172A1 STLR**
Low Bed 25 ton (**Operational**) (Bumper: D9T)

Load: 1 ea **D7F (W76816 18)** W/ROPS
Tractor FTRAC LS Reduced) (Bumper: D10)



- b. Registration numbers: M915A1 (#1234)
M172A1 (#9876)
- c. Number of tires: 2, 4, 4, 4, 4
- d. Axle spacing: 141", 52", 249", 49"
- e. Tire Sizes: 12x20, 12x20, 12x20,
10x15, 10x15
- f. **Escort: 2 x M998 TRK UTIL CRG/TRP CARR**
- g. This convoy will **depart three (3) hours after the first convoy.**
- h. Vehicle Gap: **100 yards**
- i. Rate: **45 mph**, 50 mph catch up
- j. Personnel: 1 Officer / 5 enlisted
- k. Route and breaks are same as first convoy.

REQUEST FOR CONVOY CLEARANCE		1. CONVOY NUMBER		2. UIC		3. DATE (YYYYMMDD)	
SECTION I - GENERAL							
4. ORGANIZATION		5. STATION			6. CONVOY COMMANDER		
7. PERSONNEL STRENGTH		8. POINT OF ORIGIN			9. DESTINATION		
a. OFFICER		b. ENLISTED					
10. DATE AND TIME		a. DEPARTURE		b. ARRIVAL		11. RATE OF MARCH	
SECTION II - CONVOY COMPOSITION							
12. NUMBER OF EACH TYPE OF VEHICLE AND DESCRIPTION <i>(Include towed equipment)</i>							
13. TOTAL NUMBER OF VEHICLES		14. NUMBER OF OVERSIZE/ OVERWEIGHT VEHICLES		15a. NO. OF SERIALS		b. TIME INTERVAL	
						16a. NO. OF MARCH UNITS	
						b. TIME INTERVAL	
SECTION III - ROUTE DATA							
17. PROPOSED ROUTING <i>(Indicate US Routes, State Routes, etc.)</i>							
18. ETA AND ETD AT STATE LINES, MAJOR ROAD JUNCTIONS, MAJOR BRIDGES AND TUNNELS, METROPOLITAN AREAS AND OVERNIGHT HALT SITES <i>(Continue on a separate sheet if additional space is required)</i>							
a. LOCATION		b. ETA		c. DATE (YYYYMMDD)		d. ETD	
						e. DATE (YYYYMMDD)	
SECTION IV - LOGISTICAL DATA							
19. BRIEF GENERAL DESCRIPTION OF CARGO <i>(Brief general description; i.e., organizational impediments, etc.) (Within security limitations)</i>							

20. ARE EXPLOSIVES TO BE TRANSPORTED?			YES	NO	(If YES, describe below)		
a. CLASS	b. AMOUNT	c. DESCRIPTION	d. VEHICLES TO BE USED				
			(1) NO.	(2) TYPE			
21. STATEMENT WHY EXPLOSIVES CANNOT BE TRANSPORTED COMMERCIALY (Movements involving explosives and/or other dangerous articles are required to comply with all applicable regulations or directives)							
22. LOGISTICAL SUPPORT REQUIRED AT OVERNIGHT HALT SITES? <input type="checkbox"/> YES <input type="checkbox"/> NO (If YES, complete the following) (Use separate sheet if additional space is required)							
a. DATE (YYYYMMDD)	b. INSTALLATION		c. GAS (gals)	d. OIL (gals)	e. RATIONS	f. BILLETS	g. OTHER
23. REMARKS							
24. REQUESTING AGENCY				25. APPROVING AGENCY			
26. REQUESTED BY				27. APPROVED BY			
a. NAME (Last, First, Middle Initial)				a. NAME (Last, First, Middle Initial)			
b. GRADE	c. TITLE			b. GRADE	c. TITLE		
d. SIGNATURE			e. DATE (YYYYMMDD)	d. SIGNATURE			e. DATE (YYYYMMDD)
INSTRUCTIONS: In cases where bona-fide emergencies exist, the information contained on DD Form 1265 and DD Form 1266 may be transmitted to the appropriate headquarters by telephone or electronic transmission. In this event, reference will be made to item numbers in the sequence in which they appear on the form. Items which do not apply will be so indicated.							

REQUEST FOR CONVOY CLEARANCE		1. CONVOY NUMBER		2. UIC		3. DATE (YYYYMMDD)	
SECTION I - GENERAL							
4. ORGANIZATION			5. STATION			6. CONVOY COMMANDER	
7. PERSONNEL STRENGTH			8. POINT OF ORIGIN			9. DESTINATION	
a. OFFICER		b. ENLISTED					
10. DATE AND TIME		a. DEPARTURE		b. ARRIVAL		11. RATE OF MARCH	
SECTION II - CONVOY COMPOSITION							
12. NUMBER OF EACH TYPE OF VEHICLE AND DESCRIPTION <i>(Include towed equipment)</i>							
13. TOTAL NUMBER OF VEHICLES		14. NUMBER OF OVERSIZE/ OVERWEIGHT VEHICLES		15a. NO. OF SERIALS		b. TIME INTERVAL	
						16a. NO. OF MARCH UNITS	
						b. TIME INTERVAL	
SECTION III - ROUTE DATA							
17. PROPOSED ROUTING <i>(Indicate US Routes, State Routes, etc.)</i>							
18. ETA AND ETD AT STATE LINES, MAJOR ROAD JUNCTIONS, MAJOR BRIDGES AND TUNNELS, METROPOLITAN AREAS AND OVERNIGHT HALT SITES <i>(Continue on a separate sheet if additional space is required)</i>							
a. LOCATION		b. ETA		c. DATE (YYYYMMDD)		d. ETD	
						e. DATE (YYYYMMDD)	
SECTION IV - LOGISTICAL DATA							
19. BRIEF GENERAL DESCRIPTION OF CARGO <i>(Brief general description; i.e., organizational impediments, etc.) (Within security limitations)</i>							

[illegible]

REQUEST FOR SPECIAL HAULING PERMIT				1. CONVOY NUMBER		2. UIC		3. DATE (YYYYMMDD)		
SECTION I - GENERAL										
4. ORGANIZATION				5. STATION				6. DATE OF MOVEMENT (YYYYMMDD)		
								a. STARTING		b. COMPLETION
7. POINT OF ORIGIN					8. DESTINATION					
9. ARRIVAL AT STATE LINES					10. ROUTING <i>(Stipulate US Routes, State Routes, etc.)</i>					
a. DATE (YYYYMMDD)		b. TIME		c. STATE LINE						
11. ESCORT REQUIREMENTS										
SECTION II - VEHICLE AND LOAD DATA										
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12. VEHICLE										
(1) TRUCK								<i>(Empty)</i>		
(2) TRUCK-TRACTOR								<i>(Empty)</i>		
(3) TRAILER								<i>(Empty)</i>		
(4) SEMI-TRAILER								<i>(Empty)</i>		
(5) OTHER <i>(Specify)</i>								<i>(Empty)</i>		
13. LOAD										
14. OVERALL <i>(Vehicle and load)</i>										
15. DESCRIPTION OF LOAD <i>(Brief general description: Organization impediments, etc.) (Within security limitations)</i>										
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	AXLE 1 a.	AXLE 2 b.	AXLE 3 c.	AXLE 4 d.	AXLE 5 e.	AXLE 6 f.	AXLE 7 g.	AXLE 8 h.	TOTAL i.
18. NUMBER OF TIRES									0
19. TIRE WIDTH (Inches)									0
20. TIRE SIZES									
21. AXLE LOAD (Empty)									0
22. AXLE LOAD (Loaded)									0
23. AXLE SPACING (See Item 17 for identification)	A SPACING	B SPACING	C SPACING	D SPACING	E SPACING	F SPACING	G SPACING	H SPACING	
24. REMARKS									
25. MOVEMENT BY HIGHWAY IS									
<input type="checkbox"/> ESSENTIAL TO NATIONAL DEFENSE <input type="checkbox"/> IN THE INTEREST OF NATIONAL DEFENSE									
26. REQUESTING AGENCY					27. APPROVING AGENCY				
28. REQUESTED BY					29. APPROVED BY				
a. NAME (Last, First, Middle Initial)					a. NAME (Last, First, Middle Initial)				
b. GRADE		c. TITLE			b. GRADE		c. TITLE		
d. SIGNATURE			e. DATE (YYYYMMDD)		d. SIGNATURE			e. DATE (YYYYMMDD)	
INSTRUCTIONS									
GENERAL: DD Form 1266, "Request for Special Hauling Permit" will be used to obtain special hauling permits for the movement of over-size/overweight vehicles over public highways when accompanying a convoy or when traveling separately. This form, in duplicate and accompanied by letter of transmittal, will be forwarded through the local transportation officer so as to reach the appropriate headquarters not less than ten (10) working days prior to the starting date of the movement. Letters of transmittal will contain complete itinerary and explanation of the movement. One (1) letter of transmittal is sufficient when several DD Forms 1265 and 1266 involving one (1) movement are forwarded to the appropriate headquarters. In cases where bona-fide emergencies exist, the information contained in this form and DD Form 1265 may be transmitted to the appropriate headquarters by telephone or electronic transmission. In this event, reference will be made to item numbers in the sequence in which they appear on the forms. Items which do not apply will be so indicated.					SPECIFIC: Item 12.a, b., c., and d. - Complete nomenclature of vehicles involved. More than one unit may be included, provided units are identical in equipment, load characteristics, routing and movement date. Total number of units shall be indicated prominently. Item 12.e. - Note all units other than standard highway vehicles; road equipment, guns, etc. Item 12.d. - Indicate the registration number for each unit or combination of units. Use additional page if required. Item 17 - Indicate appropriate number of axles by inserting number in proper circles. Block out circles not applicable. Item 24 - For movement through the District of Columbia, include name of manufacturer of equipment.				



UMODPC



The Transportation Coordinator-Automated Command and Control Information System (TC-ACCIS)

UMODB03

1



References:



FORSCOM/ARNG Regulation 55-1, *Unit
Movement Planning*

FORSCOM/ARNG Regulation 55-2, *Unit
Movement Data Reporting*

TB 55-46-1, *Standard Characteristics for
Transportability of Military Vehicles and
Oversized/Overweight Equipment*

2



TC-ACCIS Familiarization



- This lesson is only a brief familiarization to TC-ACCIS functions.
- It is not and should not be considered a TC-ACCIS certification course.
- You or someone in your command should attend formal TC-ACCIS training (one week).

3



TC-ACCIS

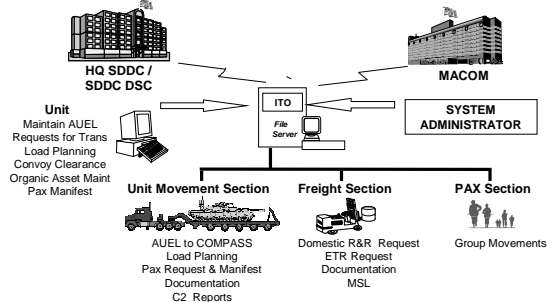


- TC-ACCIS is an information management and data communication system used by the U.S. Army (Reserve and Active components) to:
 - Plan and execute unit deployments
 - Create & maintain UMD, plan rail movements, prepare convoy requests, vehicle load plans MSLs & other movement documentation
- It aims to improve deployment responsiveness, improve timeliness, accuracy and availability of deployment information, and to reduce paperwork
- Principal users are UMOs & UMC/ITO

4



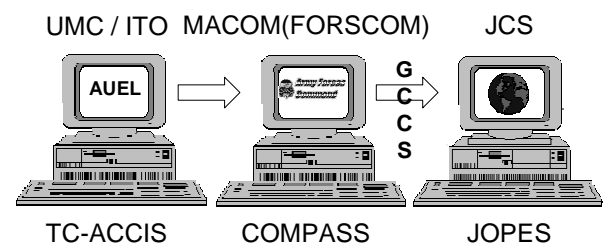
Distribution & Functional Diagram



5



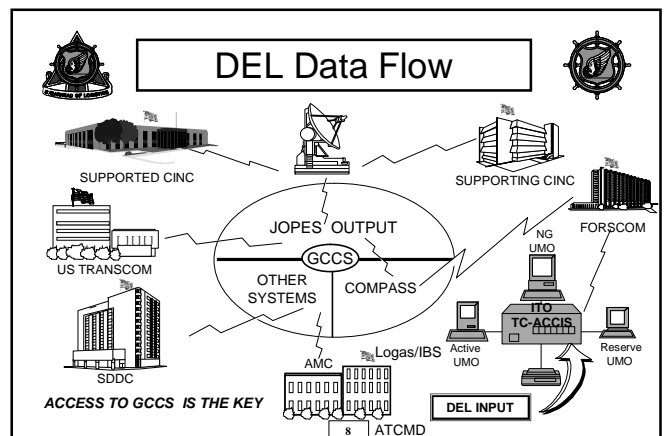
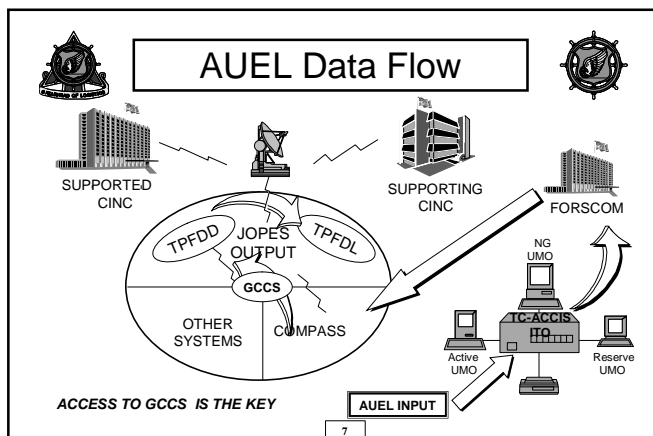
TC-ACCIS Information Flow



UNCLASSIFIED


SECRET

6



UMO Basic TC-ACCIS Tasks

- UMOs should be able to accomplish the following TC-ACCIS tasks:
 - Log onto the system
 - Locate the Automated Unit Equipment List Data (AUDEL)
 - Update and maintain the AUDEL
 - Create the Deployment Equipment List (DEL)



9

UMO Basic TC-ACCIS Tasks (Cont)

- UMOs should be able to: (Cont)
 - Create documentation for Highway Movements
 - Submit a Request for Transportation
 - Create a Unit Rail Load List
 - Produce TC-ACCIS reports

10

Summary

- We have discussed:
 - The TC-ACCIS system is used by Active Army and Reserve Components.
 - This system allows unit to plan and execute unit movements and deployments.
 - Discussed information that you will be able to extract from the TC-ACCIS system.


11

The Transportation Coordinators'-Automated Information for Movements System II (TC-AIMS II)


UMODB03

TBOLC 500-500-07

12



References:




FORSCOM/ARNG Regulation 55-1, *Unit Movement Planning*

FORSCOM/ARNG Regulation 55-2, *Unit Movement Data Reporting and System Administration*


TB 55-46-1, *Standard Characteristics for Transportability of Military Vehicles and Outsized/Overweight Equipment*

TCAIMS II System User Manual (SUM)

13




TC-AIMS II




- TC-AIMS II is an information management and data communication system used by the U.S. Army and Navy(Active and Reserve components) to:
 - Plan and execute unit deployments
 - Create & maintain UMD, plan rail movements, prepare convoy requests, vehicle load plans, MSLs & other movement documentation
- It improves deployment responsiveness, Timeliness, accuracy, availability of deployment information, and to reduce paperwork
- Principle users are UMOs, UMOICs, MWOs and UMCs/ITO

14



What is TC-AIMS II?



• THE US ARMY AND US NAVY SYSTEM SUPPORTING ALL UNIT AND INSTALLATION DEPLOYMENT REQUIREMENTS

Provides Units

• DEPLOYMENT EQUIPMENT LIST

• LOAD PLANNING

• CARGO MANIFESTING

• PERSONNEL MANIFESTING

• MOVEMENT CLEARANCE

Interfaces to

• GLOBAL TRANSPORTATION NETWORK (GTN)

• CONUS MOVEMENT SYSTEMS

GFM-ETA

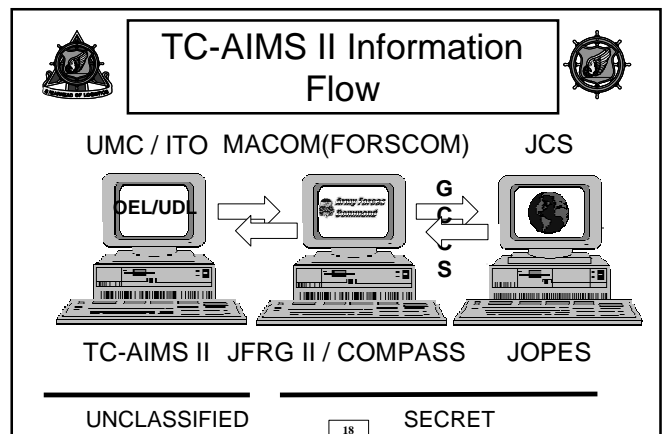
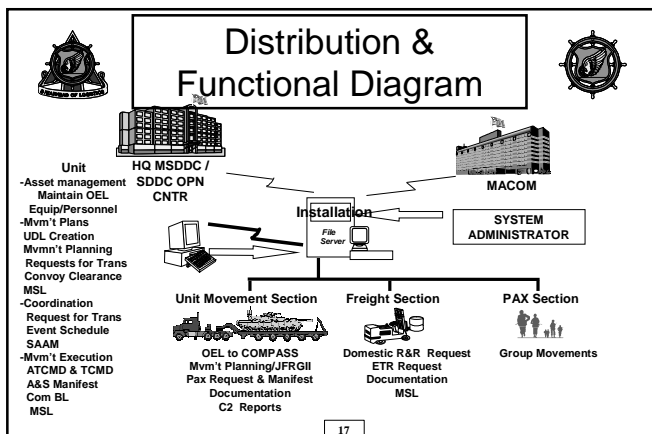
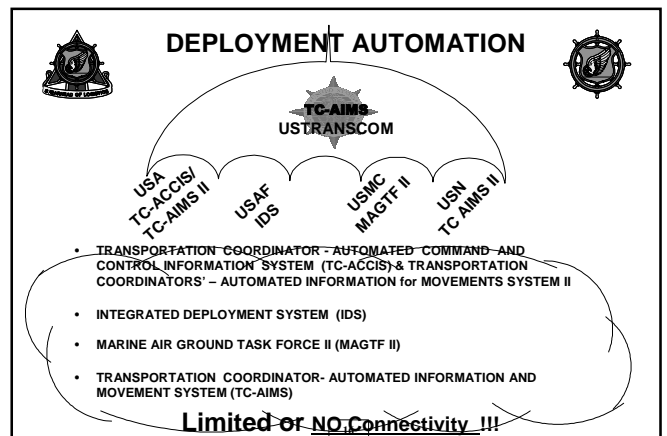
• STRATEGIC LIFT SYSTEMS

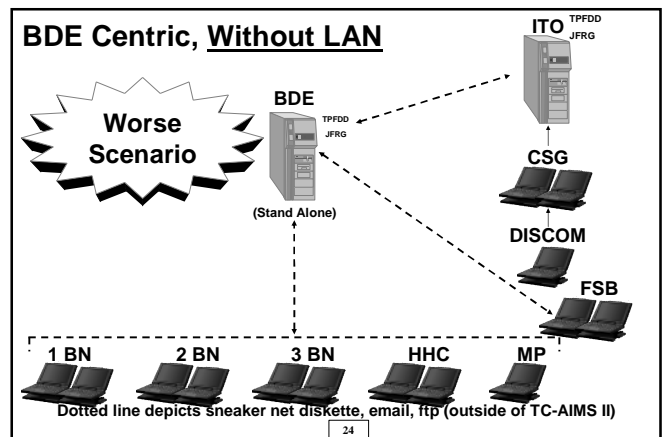
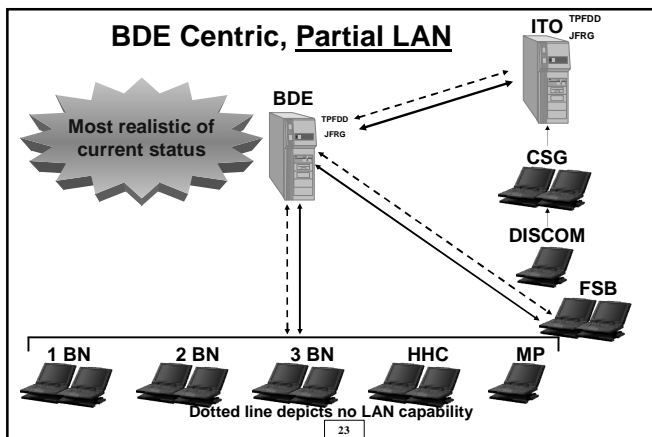
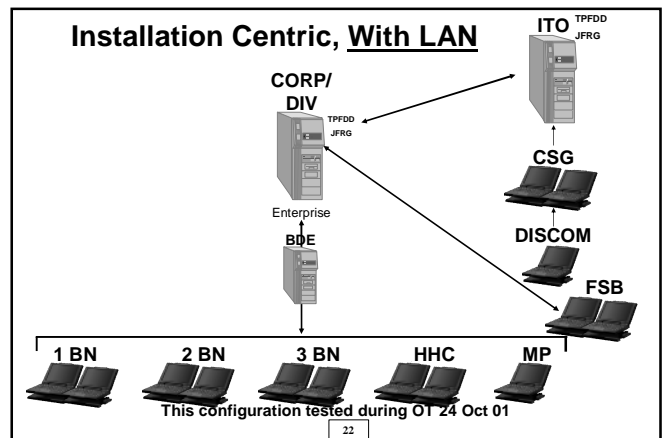
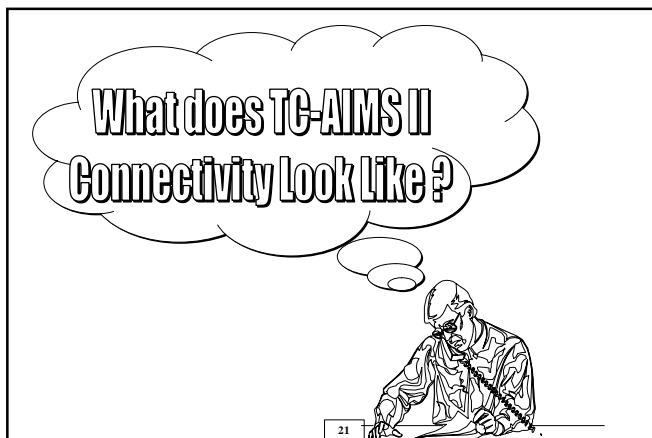
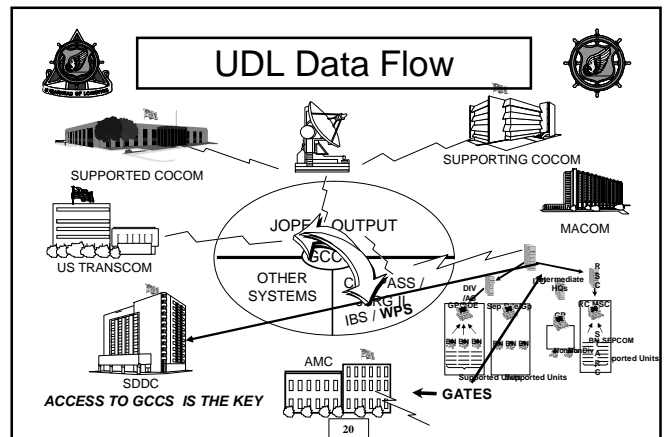
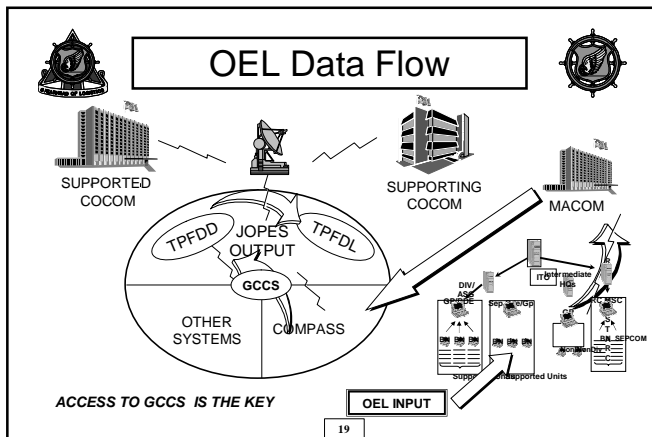
WPS

• COMPUTERIZED MOVEMENT PLANNING AND STATUS SYSTEM

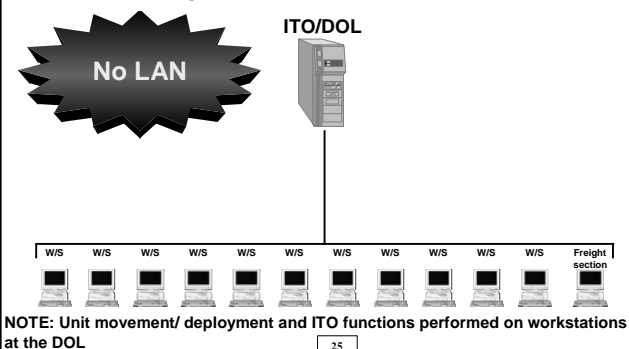
• JOINT FORCES REQUIREMENT GENERATOR SYSTEM II (JFRG II)

15



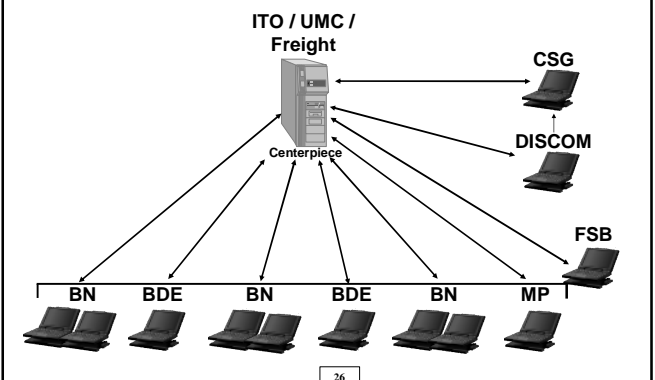


ITO Centric, Central location, TC-ACCIS / TC-AIMS swap out



25

ITO Centric, With LAN



26



TC-AIMS II Familiarization



- This lesson is only a brief familiarization to TC-AIMS II functions.
- It is not and should not be considered a TC-AIMS II certification course.
- You or someone in your command should attend formal TC-AIMS II training.

27



UMO Basic TC-AIMS II Tasks



- UMOs should be able to accomplish the following TC-AIMS II tasks:
 - Log onto the system
 - Locate the Organization Equipment by using the ASSET MANAGEMENT Business Process Area (BPA)
 - Update and maintain the OEL
 - Create Unit Deployment Equipment List(UDL)by using the MOVEMENT PLANNING (BPA)



28



UMO Basic TC-AIMS II Tasks (Cont)



- UMOs should be able to: (Cont)
 - Make a Movement Plan for Air and Surface Mvmnt by building Segments and Legs
 - Create a Convoy Plan
 - Submit a Request for Transportation
 - Produce TC-AIMS II reports

29

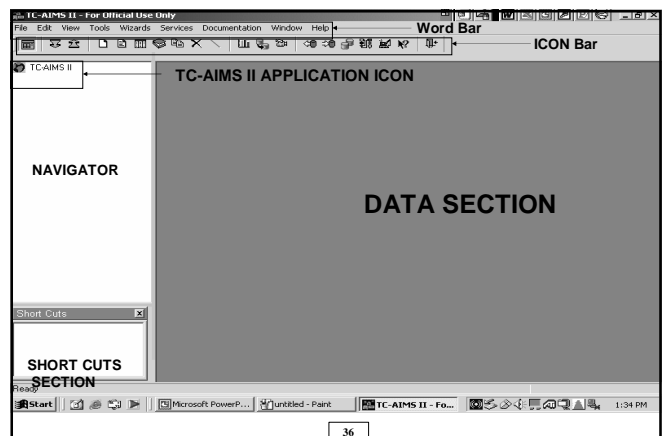
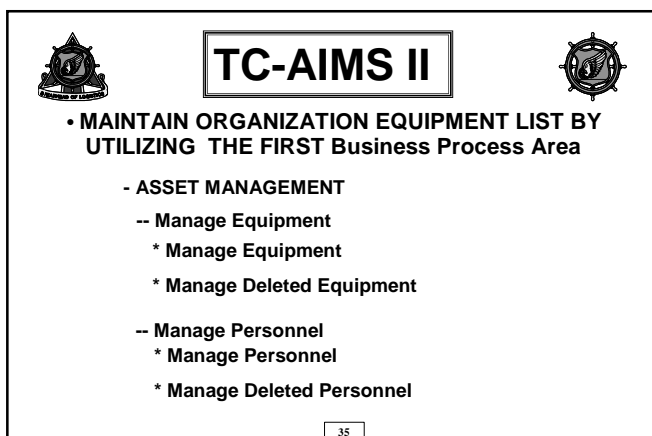
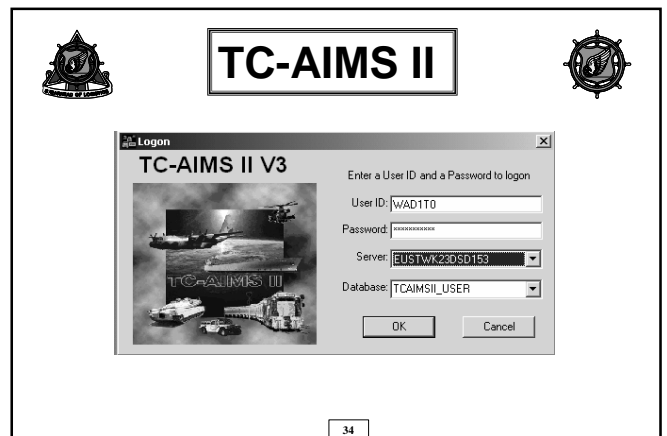
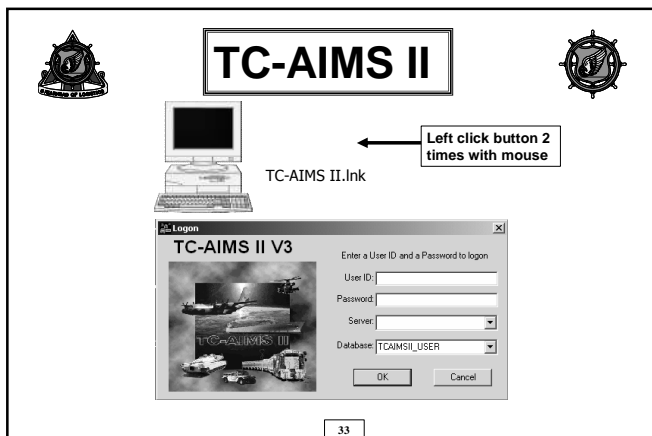
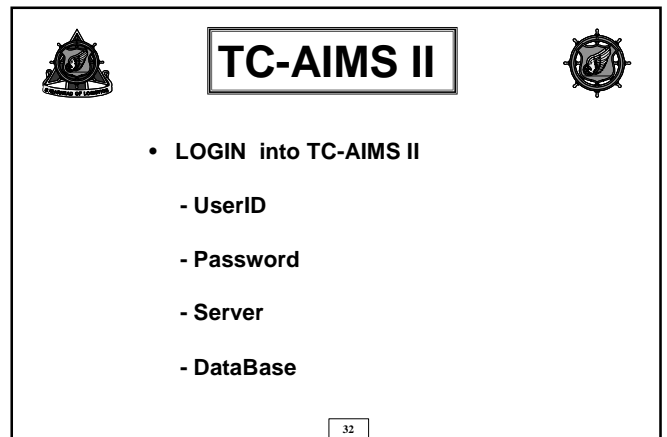
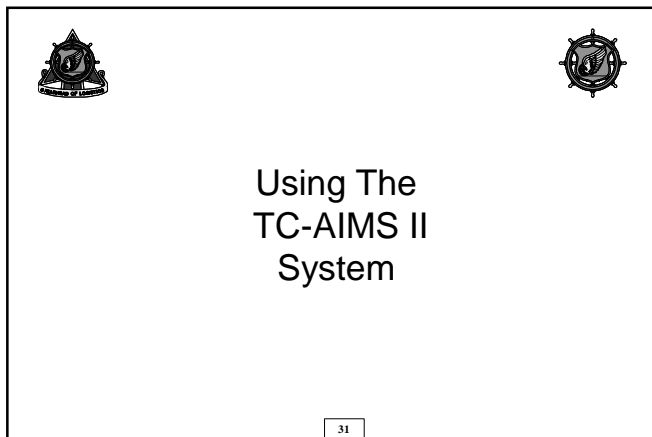


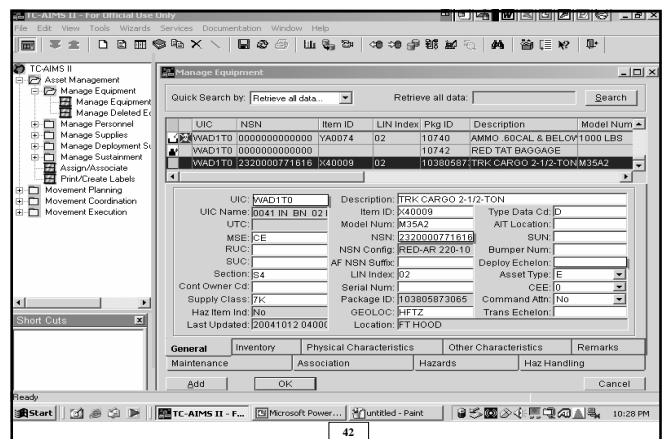
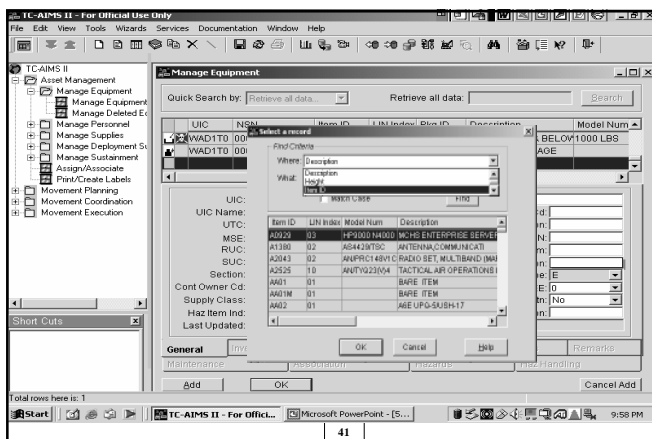
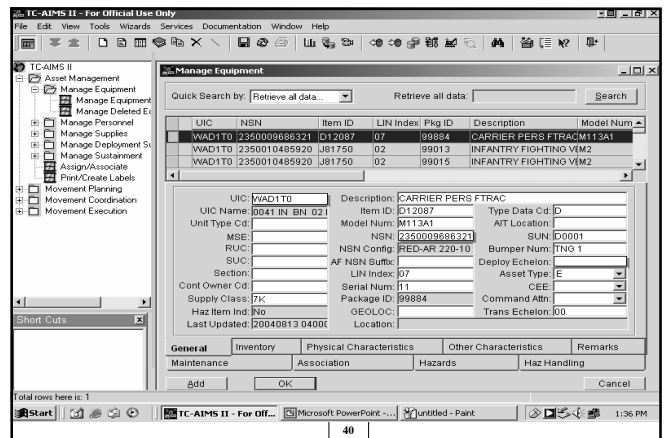
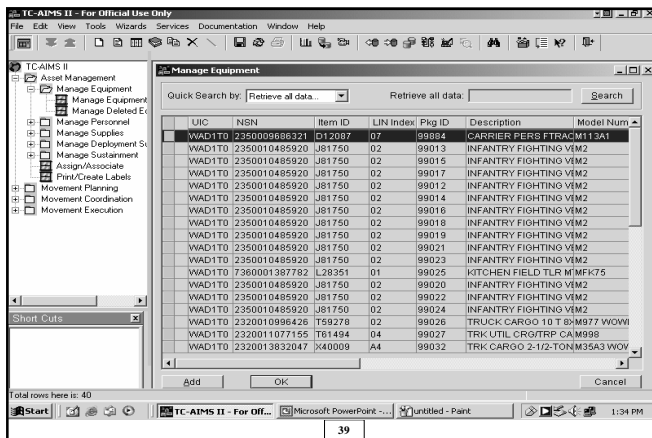
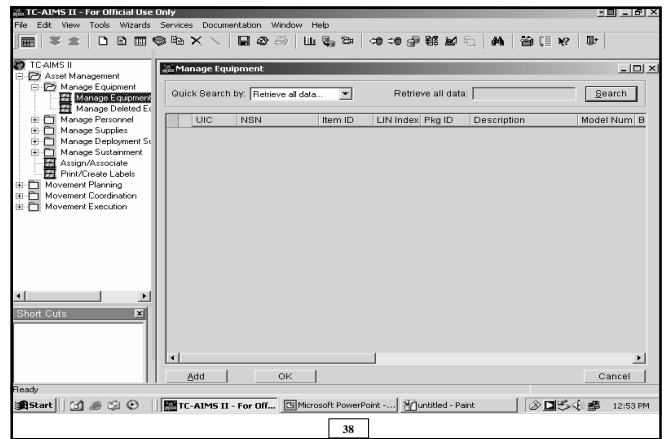
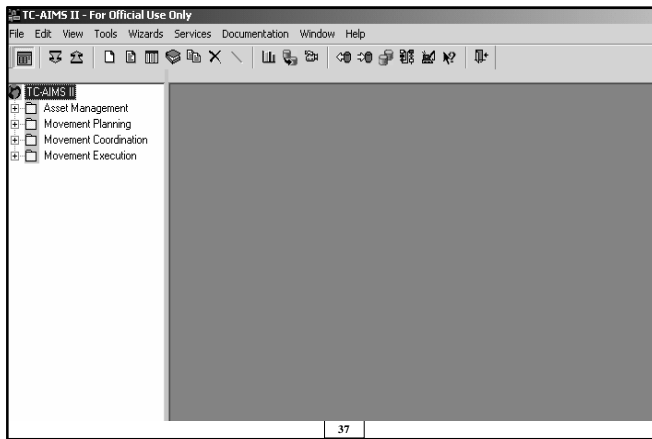
Summary

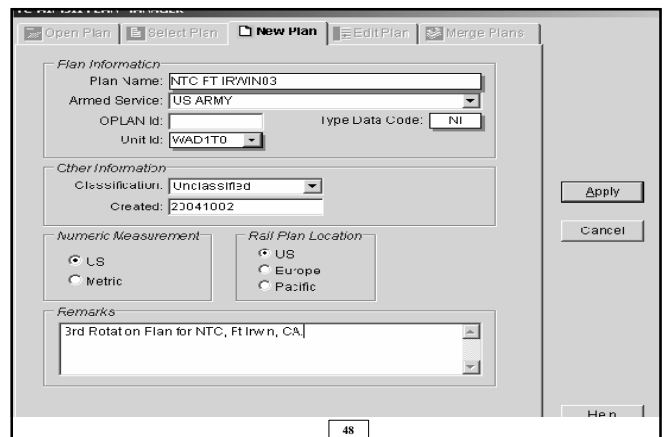
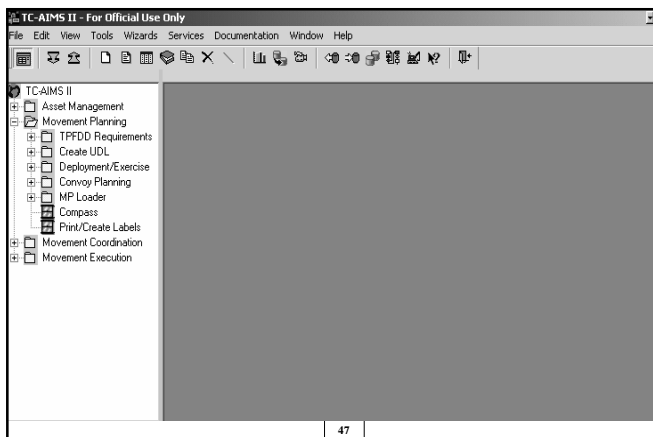
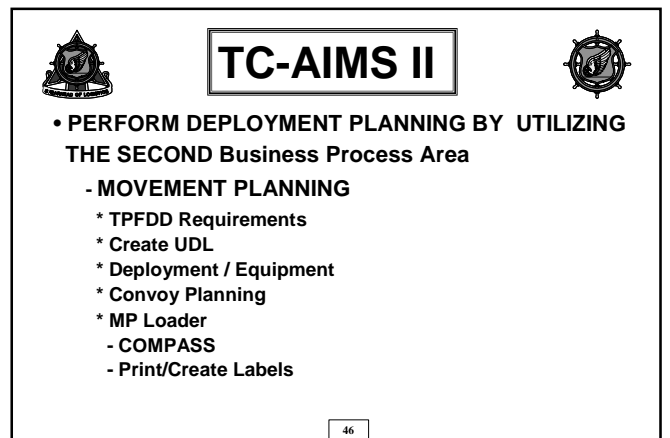
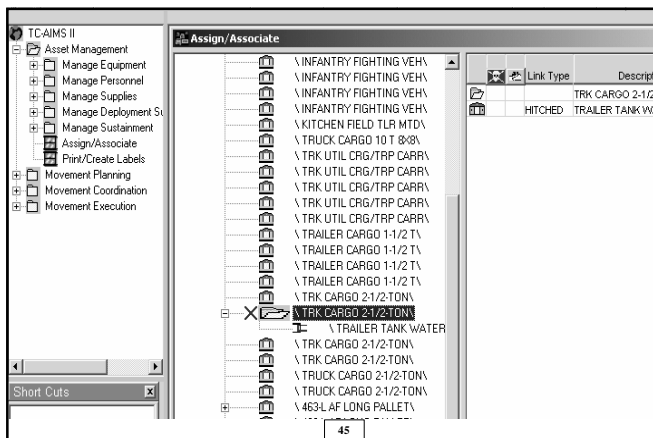
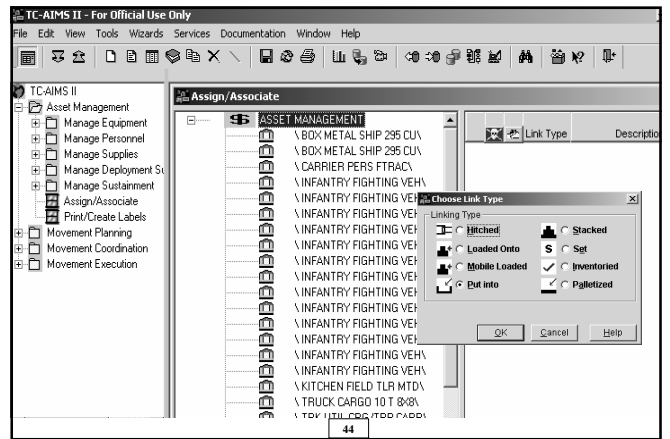
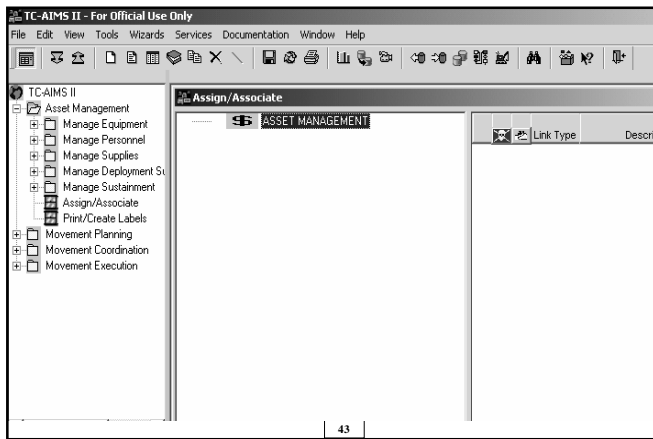


- We have discussed:
 - How TC-AIMS II system is used by U.S.Army Active and Reserve Components.
 - This system allows unit to plan unit movements plans for exercises and deployments.
 - Discussed information that you will be able to extract from the TC-AIMS II system.
 - Discussed how to use TC-AIMS II system.

30









TC-AIMS II



TPFDD Requirements

- Allows higher HQ users to import a JFRG II file from JOPES for :
 - Viewing and editing by BDE or higher MOVEMENT staffs and then passing to lower echelons for planning refinement in TC-AIMS II
 - To prioritize UICs or view TPFDD requirements
 - Add ULNs for TPFDD movement

49



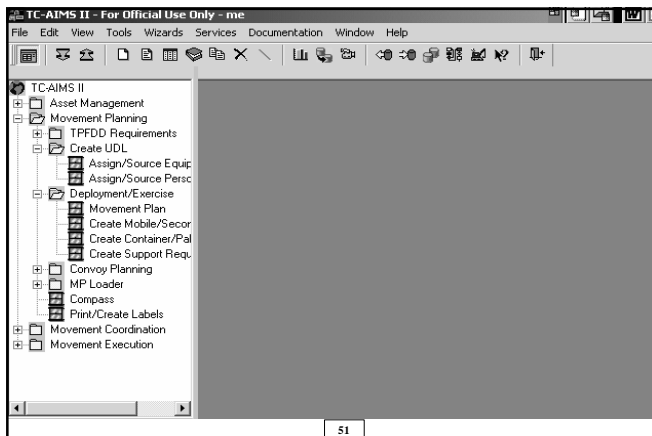
TC-AIMS II



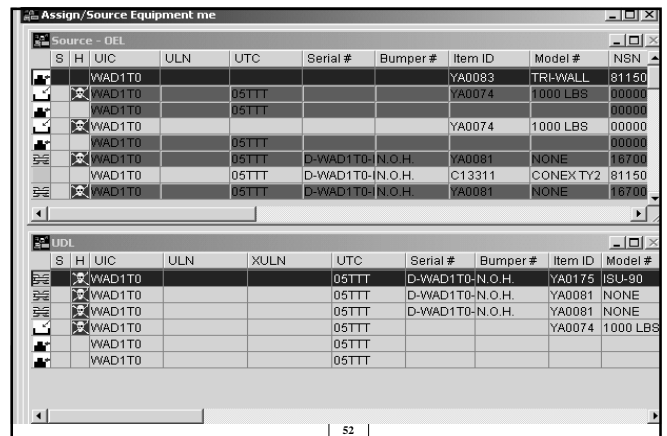
CREATE UDL

- Allows unit UMOs or higher HQ users to assign Equipment and Personnel from Organizational Equipment List (OEL) and Organizational Personnel Roster (OPR) to the Unit Deployment List (UDL)

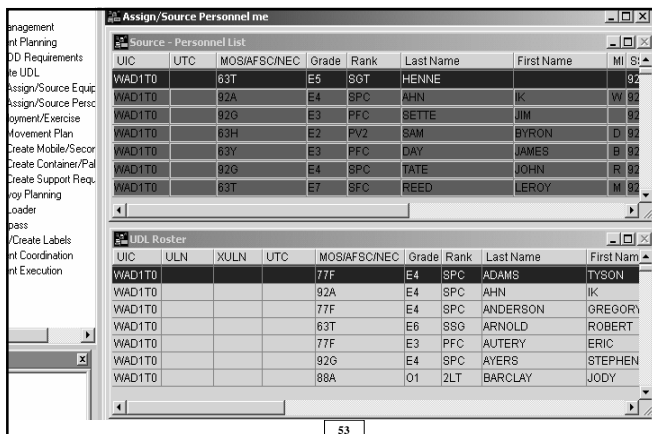
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53



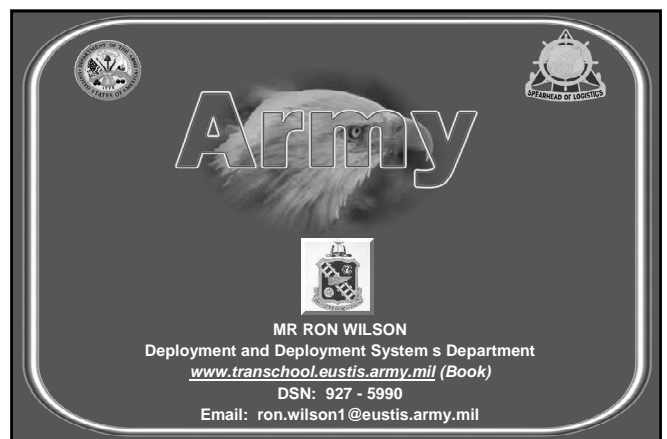
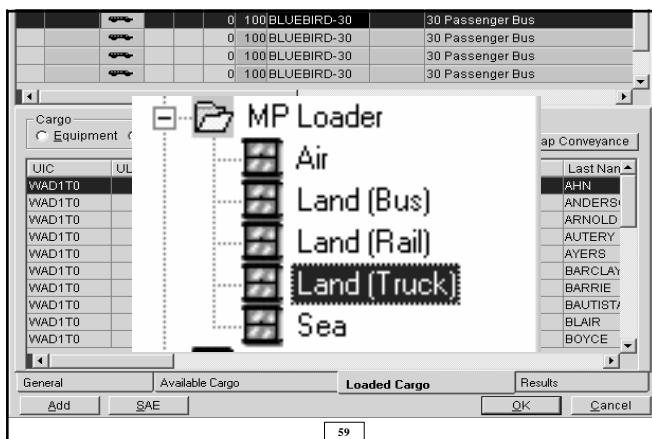
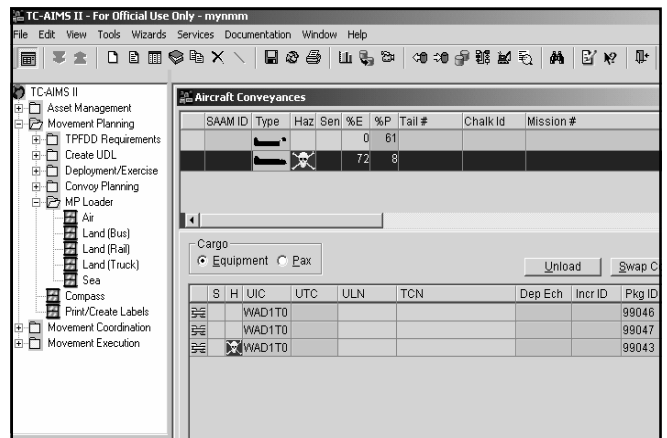
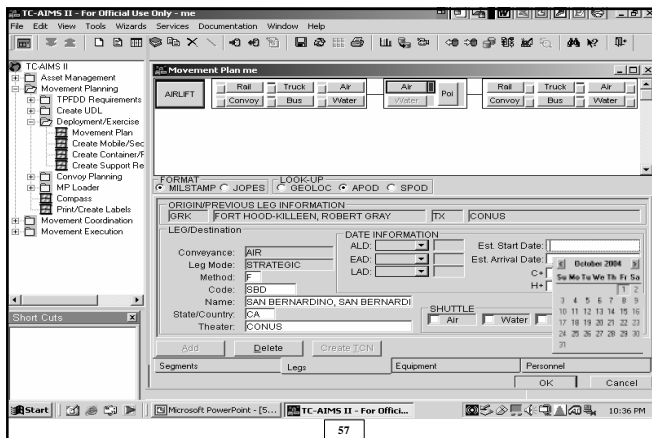
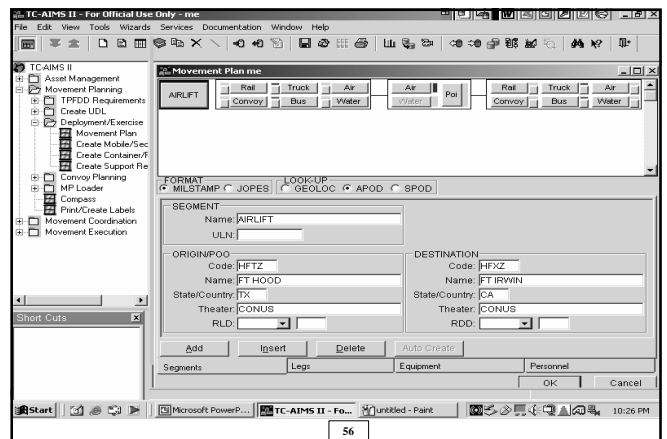
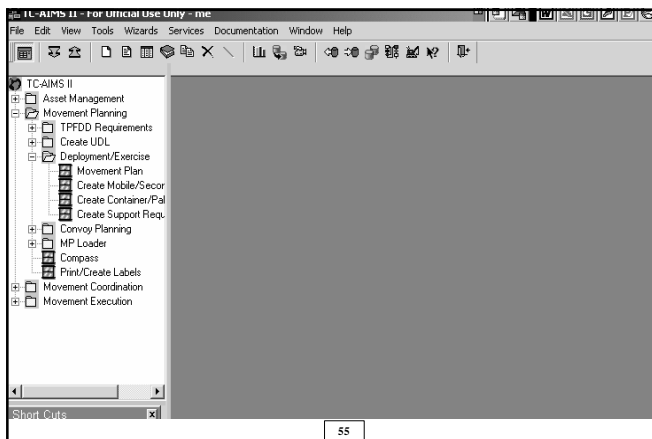
TC-AIMS II



Deployment / Exercise

- ✓ • Movement Plan
- ✓ • Create Mobile Secondary Loads
- Create Container / Pallet Load List
- ✓ • Create Support Request

54



UMODPC RAIL OPERATIONS

UMODC01



1



References



FM 3-35.4, *Deployment Fort-To-Port*

FM 4-01.011, *Unit Movement Operations*

FORSCOM/ARNG Regulation 55-1, *Unit Movement Planning*

TM 55-2200-001-12, *Application of Blocking, Bracing, Tiedown Materials for Rail Transport*

TEA PAM 55-19, *Tie-Down Handbook for Rail Movements*

TB 55-46-1, *Standard Characteristics for Transportability of Military Vehicles and Other Outsize/Overweight Equipment*

2



Surface Transportation



- What if unit equipment is non-roadable?.... or is beyond organic lift capability?



...Then you must depend upon commercially provided service like rail!

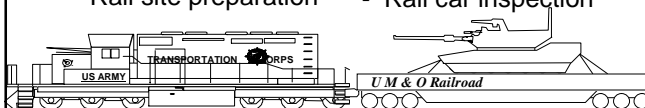
3



Responsibilities -- General



- The deploying unit & installation both have planning and execution responsibilities for major rail activities
 - Rail loading/unloading
 - Restraining Material
 - Rail site preparation
 - Rail car inspection



4



Unit Responsibilities



- **Unit commander:** Overall responsibility for preparing unit for rail operations
- Major unit responsibilities:
 - Prepare rail movement **plan**
 - Submits **movement requirements** to the ITO (AUCL to DEL/OEL to UDL)
 - Prepare **equipment** for rail movement
 - **Load** railcars (under the technical supervision of the UMC)

Ref: FM 3-35.4, p.H-2

5



Unit Responsibilities (Cont)



- Specific responsibilities:
 - Appoint an **OIC** for the rail operation
 - Designate **safety officer**
 - Coordinate with Director of Public Works for blocking and bracing material
 - Provide trained **load teams**

6



Unit Responsibilities (Cont)



- Ensure vehicles are **properly prepared/configured**
 - Removing canvas and bows
 - Securing moving vehicle parts
 - Packing, crating, banding, and blocking and bracing secondary loads
 - Use FORSCOM/ARNG 55-1 & SDDCTEA Pam 55-19
- Coordinate logistical support for railhead ops
 - Lighting, latrines, mess, and medical

7



Unit Responsibilities (Cont)



- Ensure tie-down teams have proper equipment
- Stage equipment
- Ensure sufficient numbers of cars are spotted
- Inspect rail cars
- Conduct safety briefings
- Prepare rail cars for loading
- Load and tie-down equipment on rail cars
- Provide all required HAZMAT documentation to ITO

Ref: FM 4-01.11, p.3-2/3

8



Installation Transportation Office Responsibilities



- **Orders rail cars** based on the deploying unit's requirements.
- Computes railcars based on the shipping configuration of the equipment (need accurate DEL/UDL) and prepares Government Bill of Lading
- Official **liaison** with SDDC and the railway agent
- Designates installation load-out staging area
- **Joint Inspection** of railcars with railroad rep (for serviceability) prior to loading commencing
- Provides **technical advice** to units on blocking, bracing and tie down material

Ref: FM 3-35.4, p.H-2 and FM 4-01.011,p.3-3

9



Installation Transportation Office Responsibilities (Cont)



- Provide spanners as required
- Notifies the Unit on type and quantity of railcars, and railcar arrival schedule (cognizant of scheduled arrival date as POE - as listed in TPFDD)
- Publishes/maintains rail loading schedule according to the movement order/directive
- Joint inspection of loaded railcars with railway agent to ensure compliance with Army Regulations, AAR loading rules, or host nation rail rules
- Provides DD Form 836 or DD Form 2890, if necessary for HAZMAT

10

Ref: FM 3-35.4, p.3-3 and H-2



Director of Public Works (DPW)



- Provides B & B materials for deploying units
- Deploying units must determine requirements & provide in advance to the DPW.
- Provides tools, potable end loading ramps and assistance as required



Ref: FM 3-35.4, p.H-2, FM 4-01.011,p.3-3

11

and FORSCOM ARNG Reg 55-1, p.51/52



SDDC Responsibilities



- Obtaining the railcars and the routing from the railroad that is supporting the move. Advises ITO of route restrictions (height or weight)
- Units can request assistance through the SDDC Operations Center at Fort Eustis, VA
- Unit Movement Teams from Deployment Support Brigades (USAR) are available to be dispatched to support unit preparation for movement
- Request SDDC assistance through the UMC/ITO

Ref: FM 4-01.011,p.3-3

12

Rail Carrier Representative Responsibilities

- Joint inspection with ITO rep before cars positioned at loading ramp.
- Inspection following railcar loading to ensure:

Loaded railcars comply with AAR rules
- Final approval authority for accepting the rail loads

13

OCONUS RAIL OPERATIONS

- A **Movement Control Team (MCT)** normally performs the functions associated with the installation (ITO [ordering railcars, liaison with HN railway agent, inspection of railcars, technical advice etc])
- **Area Support Group** or **Base Support Battalion** provide blocking and bracing material and tools/assistance as required
- Unit determines movement requirements and submits them to the MCT
- Deploying unit prepares equipment (cleans and configures) - cognizant or pertinent regulations if crossing international boundaries - and loads equipment

Ref: FM 3-35.4, p.4-16 and FM 4.01.011, p.3-7/8

14

OCONUS RAIL OPERATIONS (cont)

- MCT unit manages railhead ops in the marshaling and staging areas
- Deploying units provide drivers, tie-down teams, safety monitors, and other support personnel as directed
- Deploying unit documents its equipment and personnel for rail transport
- MCT unit consolidates and coordinates all rail movement with other en route nations and the carrier
- When rail is the primary means of deployment, the railhead is the POE

Ref: FM 3-35.4, p.4-16

15

Rail Load Planning

- TC-ACCIS/TC-AIMS II provides automated rail load planning capability
- Use FORSCOM Form 285-5-R for manual load planning

REF: FORSCOM/ARNG Reg 55-1, p.30

16

Railcar Requirements

- Rail cars are obtained by ITO in the types and quantities required, based upon the deploying unit's requirements
- Deployment may be by commercial or 'DODX' railcars



17

The Official Railway Equipment Register



- The Official Railway Equipment Register is used to determine the type of rail cars needed, and their associated capacity and dimensions
- Excerpts for Trailer Train & DODX railcars contained in TM 55-2200-001-12

18



TM 55-2200-001-12



- TM 55-2200-001-12 (Appendix H-1), contains DODX table used to determine the types of DODX rail cars needed, and their associated capacity and dimensions

DEPARTMENT OF DEFENSE MILITARY TRAFFIC MANAGEMENT COMMAND-WASHINGTON, D.C. 20315 Reporting Marks and ACI Nos.—DODS-1 1/55									
FREIGHT EQUIPMENT									
ACI	DESCRIPTION	MARKING	TYPE	CLASS	LOADING	UNLOADING	WEIGHT	CAPACITY	REMARKS
1	Flat	1	1	1	1	1	1	1	1
2	Flat	2	2	2	2	2	2	2	2
3	Flat	3	3	3	3	3	3	3	3
4	Flat	4	4	4	4	4	4	4	4
5	Flat	5	5	5	5	5	5	5	5
6	Flat	6	6	6	6	6	6	6	6
7	Flat	7	7	7	7	7	7	7	7
8	Flat	8	8	8	8	8	8	8	8
9	Flat	9	9	9	9	9	9	9	9
10	Flat	10	10	10	10	10	10	10	10

- TM 55-2200-001-12 (Appendix G), contains information on commercial special-purpose railcars

19



Types of Trains



- **Carloads** (part of carrier regular train service) - average speed of 13 mph or 312 miles per day
- **Unit train** - additional train
 - If not carrying dimensional (high/wide loads) use an average speed of 22 mph or 528 miles per day
 - For dimensional loads use the 'carload' speed for planning



Ref: FM 3-35.4, p.H-3/4

20



Railcars



- There are several **types of railcars** used for military exercises and deployments
- **Open** Top Cars
 - + Flat Cars
 - + Gondolas



21



Railcars (Cont)



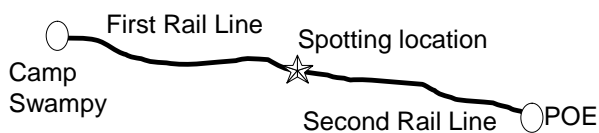
- **Closed** Cars
 - + Box car
- **Specialty** Cars
 - + Multilevel
 - + Heavy lift
 - + TOFC
 - + COFC



22



ITO Requests Rail Routing from SDDC



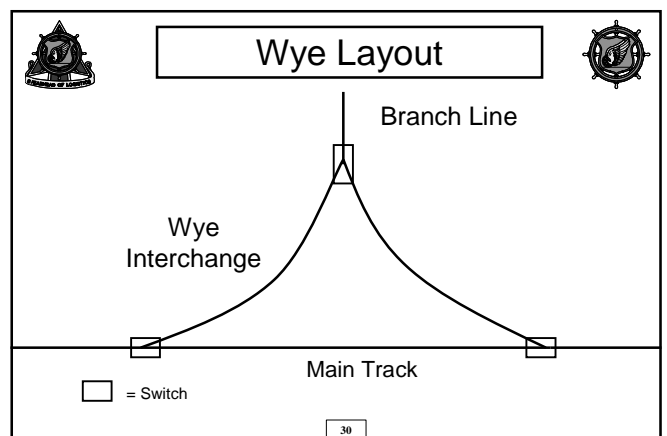
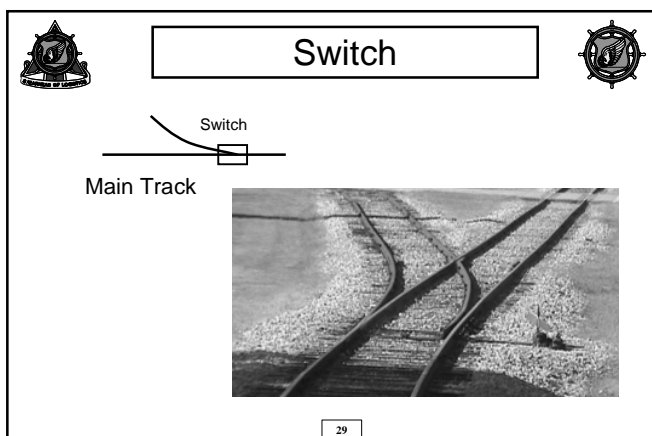
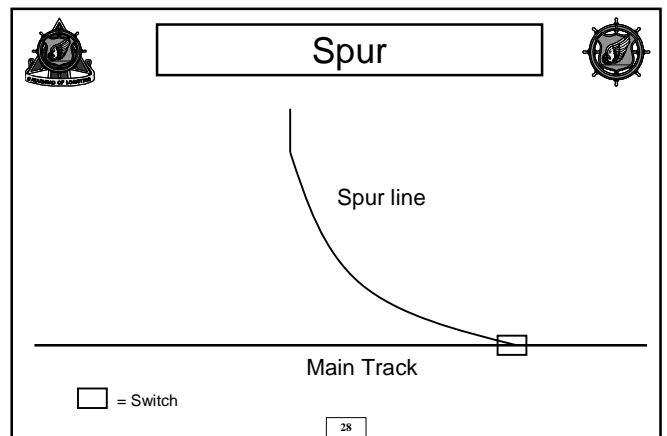
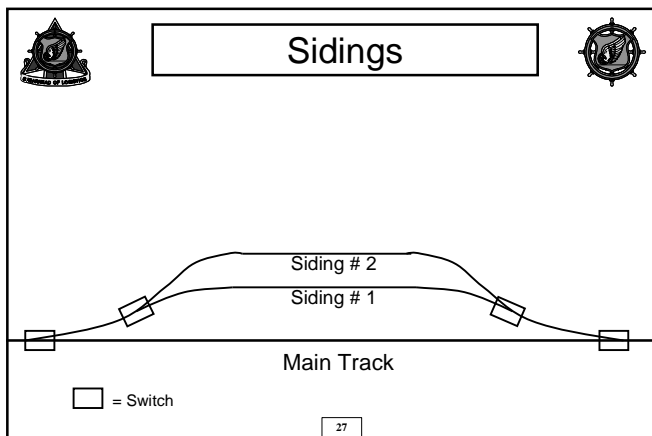
SDDC obtains routing from rail company selected

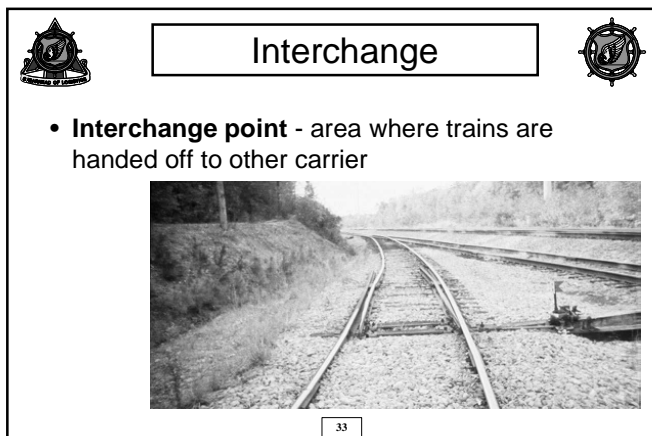
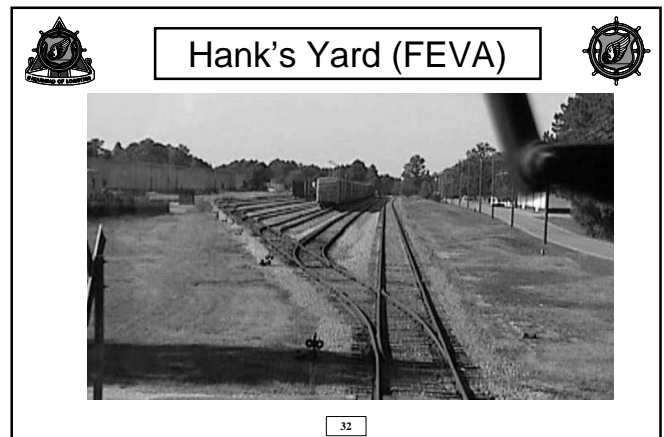
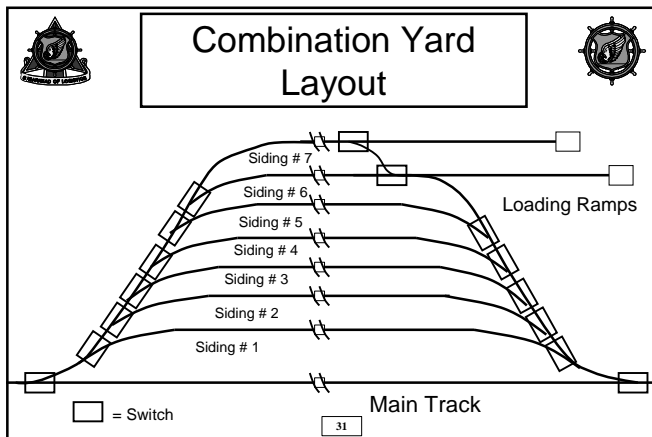
23

RAILWAY FACILITIES AND EQUIPMENT



24





Defense Freight Rail Interchange Fleet (DFRIF)

- Mainly used for over-dimensional equipment or to meet deployment time constraints

Flatcars:	
General Purpose	1477
Special Purpose	139
Tank cars:	
General Purpose	375
Special Purpose	18
Boxcars:	
Special Purpose	30
Refrigerated	9
Misc cars:	
Escort Cabooses	6
Guard Cars	5
Spec Lease	11
TOTAL DODX:	2070

34

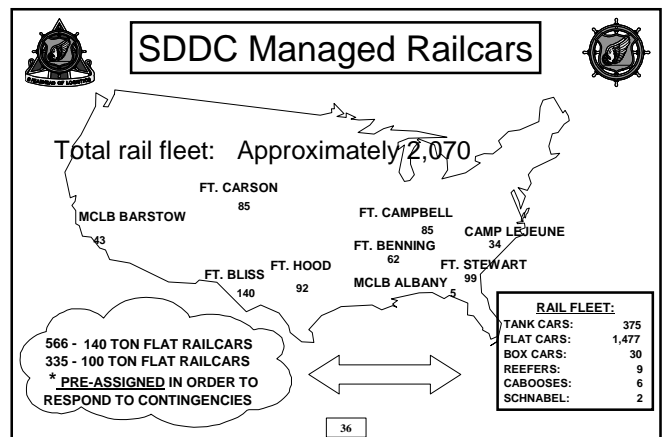
ASMP Railcar Requirements

- Part of DFRIF - sited at PPPs to support rapid deployment (restrictions on use)
- DA DCSOPS sets priority on which installations get railcars first.

- Ft Stewart	233	AMCCOM Installations: 198 cars at 12 Ammo Plants
- Ft Hood	185	
- Ft Carson	85	
- Ft Campbell	236	
- Ft Benning	62	

Ref: FORSCOM Reg 55-1, p.35/36

35





Railway Equipment



37



Flat Cars



- Ideal for transporting military cargo and vehicles
- Equipment may be carried on DOD or common carrier flatcars



38



DODX 40000 Series 68' Flat Car



- 40000 Series
 - 140 Ton Capacity
 - Only DODX railcar to move M1A1



39



DODX 41000 Series 68' Flat Car



- 41000 Series
 - 85-100 Ton
 - Most have spanners, chains & container pedestals



40



DODX 42000 Series 89' Flatcar



- 42000 - Series
 - 85 -100 ton capacity
 - Used for wheeled, light tracked vehicles & containers
 - Chain tie-down with lift up container pedestals



41



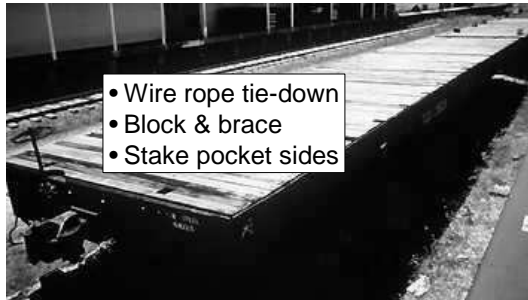
DODX 42000 Series 89' Flatcar (Cont)



- Some have no integral spanners

42

Conventional Flat Cars

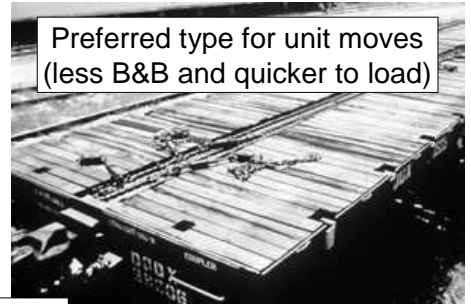


- Wire rope tie-down
- Block & brace
- Stake pocket sides

43

Chain Tie-down Flat Cars

- Wooden or steel deck
- Center or center and side chains



Preferred type for unit moves
(less B&B and quicker to load)

Ref: FM 4-01.011,p.3-3

44

Types of Flat Cars



- Flatcars without side rails are easier to load, and wider vehicles more easily accommodated

Ref: FM 4-01.011,p.3-3

45

Bi-level Flat Cars

- Taller vehicles on upper level



46

Multilevel Flat Cars

- Ramps are used to load the upper levels
- Small wheeled vehicles, protected



47

Trailer on Flatcar (TOFC)



48

Container on Flatcar (COFC)



49

MHE Support (TOFC)



50

Boxcars

- US Boxcars in domestic service have a capacity of about 100k lbs., or over 3900 cu feet.
- Ideal for commodities requiring protection from weather or susceptible to pilferage: foodstuffs, medicines, electronics, spare parts and ammunition



51

Tank Cars



52

Gondola Cars

- If car sides are necessary to keep bulk loads from shifting, use gondola cars

Conex



53

Hopper Cars

- Cars can be either covered or open at the top
- Used for transporting loose bulk commodities like gravel and coal



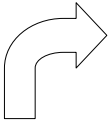
54



Switch Engines



- Used to switch rail cars in and out of a loading area.



55



Line Haul Locomotives



56



Caboose



- Not used on civilian trains
- Only used when escort required



57

Rail Loading Requirements and Procedures



58



Preparing Unit Equipment for Rail Movement



- The deploying unit is responsible for preparing its vehicles and equipment for rail movement



59



General Guidance



- Don't carry ammunition and fuel (as a secondary cargo) together on any vehicle of a rail movement
- Place warning placards on all sides of hazardous cargo loads
- Load unit equipment in organic vehicle to the greatest extent possible. Secure equipment loads properly
- Lock and seal sensitive materials (arms/ammo/explosives) in approved security containers

Ref: FM 4-01.011, p.3-3 and FORSCOM/ARNG Reg 55-1, p.35-36

60



Preparing Vehicles Prior to Loading



- Vehicle Preparation Requirements:
 - All lifting and tiedown shackles attached to vehicles
 - Fuel tanks no more than 3/4 full
 - Canvas and bows removed or banded
 - Check all tire inflation and condition



61



Preparing Vehicles Prior to Loading (Cont)



- Old series vehicles (eg HMMWV) roll down side windows, lower windshields, turn mirrors inward
- New series vehicles (eg PLS, HET, HEMTT) windows must remain up because of potential rail damage to electronic transmission and central tire inflation systems. Protect with plywood, cardboard or double layer of bubble wrap
- Do not cover headlights, windshields or mirrors with tape

Ref: FM 4-01.011 p.3-3/4 and FORSCOM/ARNG Reg 55-1, p.35/36

62



63



Preparing Vehicle Prior to Loading (Cont)



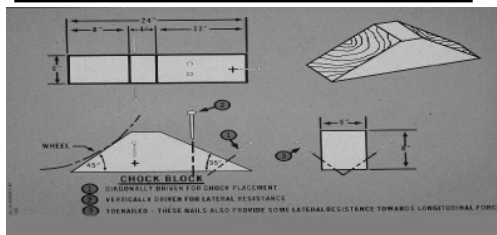
- Reduce vehicle configuration based on information contained in movement order
- Secure any materials or equipment
- Bands must be approved by AAR.
- Ensure that hood latches are functional and secure.



64



Blocking and Bracing Materials



- Blocking & bracing references contained in both TM 55-2200-001-12 & SDDCTEA Pam 55-19

65



Rail Site Facilities



Lighting

Medical support



66



Rail Site Facilities (Cont)



- Command and control facilities

- Lighting

- Latrine facilities



- Warming Tent

- Messing

- Medical support

Ref: FM 4-01.011,p.3-3/4

67



Safety Requirements



- Appoint Safety OIC or NCOIC and OIC conduct risk assessment before commencing loading
- Qualified and properly equipped medical personnel on site
- Brief all soldiers on established safety procedures prior to loading commencing:
- All loading personnel MUST wear leather gloves and hard hats/helmets. Goggles and safety boots are also recommended
- For night loading ops, ensure adequate lighting and that personnel have reflector vests and flashlights
- Personnel will not jump between or from railcars - use steps provided (running on railcars is also prohibited)
- Do not crawl under or walk between railcars
- Do not step or walk on the rails

68

Ref: FM 4-01.011,p.A-1



Safety Requirements (Cont)



- Never walk backwards on rail cars
- All vehicles being loaded/unloaded on a railcar must have a car guide (on the rail car in front of the vehicle) and two side guides (one on the ground on each side of the vehicle being moved)
- Only the car guide gives instructions to the vehicle driver - side guides keep car guide advised of how close the vehicle is to the edge of the railcar
- Car guides escort vehicle onto ramp and railcar and must stay in clear view of the driver at all times

Ref: FM 4-01.011,p.A-1 and FM 3-35.4, p.H-4

69



Safety Requirements (Cont)



- Car guide should stay one railcar ahead of the vehicle being guided. If a vehicle is already on railcar assume a secure and observable position on or beside the parked vehicle so that you cannot be pinned between the moving and parked vehicles
- Car guides must use uniform hand signals (drivers must also understand this signals)



70

Ref: FM 4-01.011,p.A-1/2



Safety Requirements (Cont)



- Ensure spanners are properly aligned, set and secured before a vehicle drivers over them. However, do not stand beside spanners when a vehicle is driving over them
- Reduced speed is used when driving vehicles onto railcars
- Personnel stay clear of main track and railcars when vehicles are moving on them (unless a designated guide)
- No sleeping in or around rail cars
- Be aware of overhead electric power lines
- Display a blue flag on the track behind the last car being loaded so that other trains will not approach
- Complete list at Appendix A in FM 4-01.011

Ref: FM 4-01.011,p.A-1/2 and FM 3-35.4, p.H-5

71



Rail Site



- Rail site must be clean and free of debris.
- Ensure spanners are available.
- Ensure that MHE is on site for equipment that requires MHE support



72



Inspection of Railcars



- Rail cars are inspected prior to being positioned at final loading locations
- Purpose of inspection is to determine the cars suitability for the intended equipment/vehicle loads
- After railcars are accepted, Military accepts full responsibility to comply with AAR rules

73



Inspection of Railcars (Cont)



- Deploying unit and ITO representative inspect railcars prior to loading equipment. Checks include:
 - Doors on closed cars open and close and interior is free of debris
 - Open car decks are free of residue and old blocking & bracing materials
 - Chains are present and serviceable on chain rail cars

74

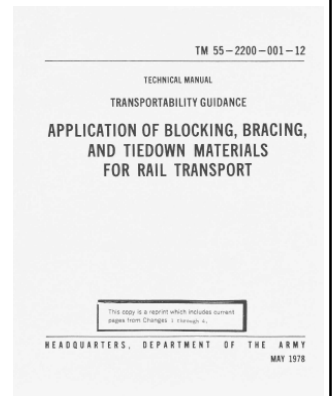
CONUS GENERAL RAIL LOADING RULES



75



- Excerpts of AAR Rules contained in TM 55-2200-001-12
- Contains Tie-down Information for Mil Vehicles & Equip
- Abide by host nation rail rules and regs OCONUS



76

Ref: FM 3-35.4, p.H-3



AAR Loading Rules



- The AAR makes no provision to protect cargo from the elements or other forms of damage



77



AAR Loading Rules (Cont)



- The loading rules are applicable to both the railroad and the ITO/Unit.
 - ☆ Railcar load and weight limits must not be exceeded

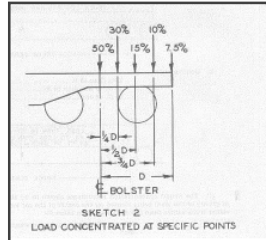
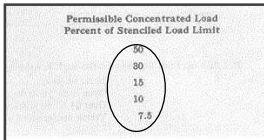


78

Ref: FM 3-35.4, p.H-3

AAR Loading Rules (Cont)

- ⌚ One-half the load limit of the railcar must not be exceeded on any axle



Ref: FM 3-35.4, p.H-3

79

AAR Loading Rules (Cont)

- ⌚ Balance load evenly on car
- ⌚ When loading large and heavy items not covered by rules, load largest dimensions and heaviest weight on the floor to prevent tipping
- ⌚ Items having a high center of balance (CB) must be secured to prevent tipping while in transit

Ref: FM 3-35.4, p.H-3

80

AAR Loading Rules (Cont)

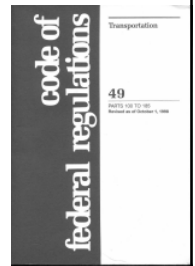
- ⌚ Loads must be adequately secured to the railcars
- ⌚ Railcars must be suitable for the safe transportation of the load, and the load must not exceed the width and height restrictions over the proposed route

Ref: FM 3-35.4, p.H-3

81

HAZMAT

- IAW Title 49, CFR and DTR Part II
- Consider exclusions, marking and placards
- If exemption required SDDC will request from carrier
- Carrier provides certificate needed for movement of Class 1 explosives
- Rail cars used for shipment of explosive must be properly sealed with an Army approved seal



82

Ref: FM 3-35.4, p.H-4

SENSITIVE/CLASSIFIED MATERIAL

- When shipping sensitive or classified material by rail, commanders may be required to provide guards or escorts
- Cargo guards and escorts maintain surveillance over the military equipment during the journey and notify railroad personnel of any problems
- Escort supervisor given copy of trip itinerary (interchange points, stops etc)
- Escorts have portable radios and are given safety and ROE briefs prior to departure

Ref: FM 3-35.4, p.H-4 and FM 4-01.011, p.A-3

83

ESCORT/GUARD DUTIES

- Detailed in Appendix A of FM 4-01.011, *Unit Movement Operations*
- Conduct cargo check one to two hours before departure
- Cargo checks whenever train stops for 30 minutes or more (check for cargo shifting, tampering [eg, missing seals], and missing or damaged cargo)
- During stops guards staggered along both sides of the train
- Incident reports to SDDC, immediately for all major incidents that could delay a shipment en route



Ref: FM 4-01.011, p.A-3/4

84



Preparation of Railcars



- Deploying unit check chain tie-downs and positions them on the railcar deck to avoid having to reposition chains after vehicle are loaded.
- Unused chains are placed in the channels to prevent them being damaged.
- Ensure railcar brakes are applied and chock rail wheels to prevent the railcars shifting during loading

Ref: FM 3-35.4, p.H-2

85



Vehicle and Equipment Loading



- Prior to loading, stage vehicles in the order they will be loaded
- Most common and expeditious method for loading vehicles on flatcars is the "circus" method
 - Flatcars equipped with spanners used as roadbed (spanners adjusted as required for each vehicle type)
 - All vehicles loaded on rearmost car, then moved forward to assigned locations

Ref: FM 4-01.011, p.3-3 and FM 3-35.4, p.H-3

86



Vehicle and Equipment Loading (Cont)



Vehicles being loaded by the "circus" method

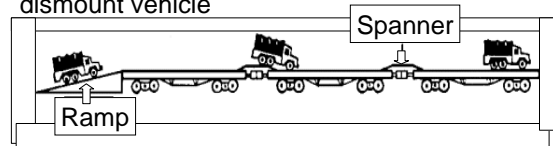
87



Loading



- Prior to loading the vehicle onto railcar, all personnel with the exception of the driver must dismount vehicle



- Rail guide should be one car ahead of vehicle or positioned not to be caught between vehicles

88

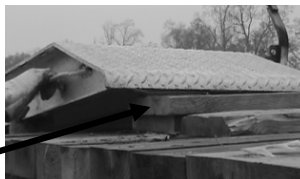


Loading (Cont)



- Ensure spanners are properly positioned & capable of supporting the heaviest load anticipated
- At least 12" of spanner should overlap the rail car deck
- Most track vehicles don't require spanners between rail cars
- When loading vehicle between railcars of uneven deck heights, be sure to place dunnage under the spanner to prevent it from slipping

Dunnage



Ref: FM 3-35.4, p.H-2

89



Loading (Cont)



- When driving on spanners, maintain a constant speed.
- Avoid jamming on brakes or reversing



90

Vehicle Spacing

- Vehicles require a minimum of 10 inches of space between vehicles.
- Ensure sufficient space around top mounted brake wheels for operation



Wrong spacing

Ref. TEA Pam 55-19 Pg. 2

91

Loading Multilevel Cars

- Exercise caution when loading vehicles on or moving vehicles through multilevel rail cars. Check deck heights
- Decks may be different heights causing vehicle to strike the upper deck.



92

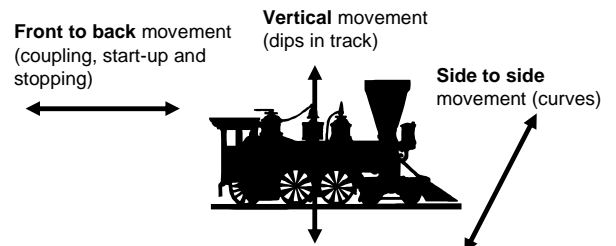
Setting Vehicles

- After positioning vehicle on railcar, vehicle operator:
 - Places transmission in neutral, secure with wire
 - Sets parking brake, secure with wire
 - Places battery switches in "off" position

Ref. TEA Pam 55-19 Pg. 1-2

93

Force Applied to Railcar Loads

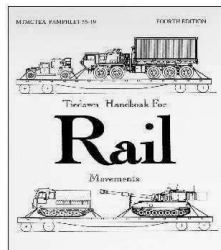


THIS IS WHY WE TIE DOWN VEHICLES/EQUIPMENT

94

Tie-down Procedures

- When securing vehicles use these techniques:
 - ☆ Inspect chain assemblies and components (for damage, missing parts and proper operation)
 - ⌚ Apply chains in pairs and equal numbers front and rear



95

Tie-down Procedures (cont)

- ⌚ Ensure in turntable type winches that the chain is taken up on the underside of the ratchet wheel



Backwards



Proper Position

96



Tie-down Procedures (Cont)



- ⌚ Ensure proper wire or chain tension

- Place tension on chain or wire rope to allow no more than one inch deflection when supporting the weight of a full grown man



97



Tie-down Procedures (Cont)



- ⌚ Secure excess wire rope or chain to the tension bearing part of the wire rope.
- ⌚ On chain devices, secure open-faced hooks to chain link with wire or nylon tie strap.
- ⌚ Lock chain-tightening device with wire.
 - Turnbuckles must have jamnuts tightened wrench-tight using two wrenches

98



Tie-down Procedures (Cont)



- ⌚ Secure chain through tie-down points at forty-five degree angle.

- ⌚ Pull chain tight as possible, ensuring that there are no twists or kinks, and secure chain hook to chain.



99



Tie-down Procedures (Cont)



- ⌚ Hand tighten turnbuckles first, then continue to tighten with open end or crescent wrench until 1/8 inch of the rubber compression ring shows.
- Store used chain assemblies in the rail car channel

100



Loading and Tie-down Checklist



- Checklists should be distributed to the loading teams. The checklist should contain the following:

Loading and Tiedown Checklist For Vehicles on Chain Tiedown Flatcars

NOTE: Copies of this page should be distributed to loading teams.

- ☐ Make certain all hood latches are secured.
- ☐ Leave at least 10 inches between vehicles.
- ☐ Check for proper brake wheel clearance.
- ☐ Do not cross the chains.
- ☐ Use symmetrical tiedown patterns.
- ☐ Secure tiedowns at approximately 45° angles.

101

Ref. TEA Pam 55-19 Pg. 34



Loading and Tie-down Checklist (Cont)



- Checklist Cont:

- ☐ Seat and lock chain anchor or winch.
- ☐ Secure shackle in tiedown provision with wire tie or cotter pin.
- ☐ Pull chain tight and attach hook above the compression unit.
- ☐ Tighten chain.
- ☐ Use appropriate tool.
- ☐ Make sure chain is not kinked or binding.

102

Loading and Tie-down Checklist (Cont)

• Checklist Cont:

- ☐ Secure hooks with wire or nylon tie straps.
- ☐ Make sure turnbuckles are wired or locked.
- ☐ Tighten jamnuts with two wrenches.
- ☐ Do not secure chains to axles or springs unless figure shows to.
- ☐ Make certain turrets and guns, radiator doors, side skirts, outriggers, crane booms, expansible van bodies, and so forth are secured from extending up or over the side of the flatcar.

103

TEA PAM 55-19

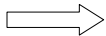
- **App A:** Trucks and Trailers
- **App B:** Tracked and Wheeled Armored Vehicles
- **App C:** MHE & Construction Equip. & Non-Vehicles
- Distribute check lists for tie-down procedures on page 34 and for 40000-series Flatcars



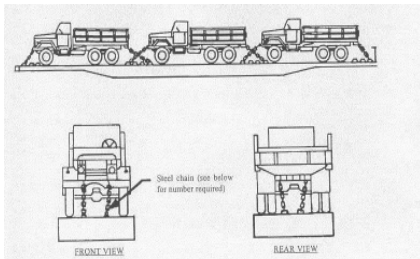
104

Trucks up to 80,000 lbs -- Chain Tie-down Illustration

- Alloy Steel Chain 3/8" and 1/2"



- TEA PAM 55-19 App A page A-2



105

Final Inspection

- Final inspection is made after the railcars are loaded to ensure that the contents are loaded, blocked and braced in compliance with AAR loading rules.
- The rail representative is the final approving authority for accepting rail loads.



106

Intransit Visibility



MSL



Reader



TC-AIMS II

GTN



ITV Regional Server

Ref: FM 4-01.011,p.3-2

107

Unloading

- Railcars off-loaded promptly at POE to allow return for further use and to avoid demurrage or detention charges (usually within 48 hrs)
- Units must remove blocking, dunnage and banding from unloaded cars before release to the carrier



Ref: FM 4-01.011,p.3-4 and FM 3-35.4, p.H-4

108

RAIL LOAD PLAN (FORSCOM Reg 55-1)					PAGE	OF	PAGES			
1. UNIT	2. UIC	3. DATE	4. TYPE PLAN							
5. UNIT LOAD NO	6. RAIL CAR NO	7. TYPE/SIZE OF RAIL CAR	8. LOAD SITE	9. DESTINATION						
10. SCALE 1/4" = 3' <div style="text-align: center; margin-top: 20px;"> </div>										
11. LOAD DESCRIPTION										
LOAD SEG a.	ITEM MODEL AND NOMENCLATURE/DESCRIPTION b.	BUMPER NO c.	SHIPMENT UNIT NO d.	REMARKS (Hazardous materials, special loading configuration, etc.) e.	Length	Width	Height	Weight	Sq Ft	Cubic
12. NAME, GRADE, ORGANIZATION OF PLANNER					13. DATE APPROVED		14. NAME, GRADE, ORGANIZATION OF APPROVING OFFICIAL		15. SIGNATURE OF APPROVING OFFICIAL	

[illegible]

DEPARTMENT OF DEFENSE, MILITARY TRAFFIC MANAGEMENT COMMAND - WASHINGTON, D.C. 20315

7-85

Reporting Marks and ACI Nos. - DODX - 1 158

General Offices: Headquarters, Military Traffic Management Command, Eastern Area. Attn: MTE-INR-M, Military Ocean Terminal, Bayonne, NJ 07002 (201)823-6411,6412,6413

FREIGHT EQUIPMENT

Cars are marked "DODX" and are numbered and classified as follows

Line No	A.A.R. Mech. Desig.	Description <i>See Explanation Pages for Abbreviations & Symbols</i>	A.A.R. Car Type Code	NUMBERS	DIMENSIONS														CAPACITY		NO OF CARS						
					INSIDE			OUTSIDE										DOORS									
					Length	Width	Height	Length	Width		Extreme Width	To Extreme Width	Height from Rail		Side												
									At Eaves or Top of Sides or Platform				To Eaves or Top of Sides or Platform	To Extreme Height	Width of Opening	Height of Opening											
					ft	In.	ft	In.	ft	In.	ft	In.	ft	In.	ft	In.	ft	In.	Cubic Feet Level Full	SRL Lbs. (000)							
1	NE	Caboose.....	M930	300-905	30	8	8	6	11	41	8	10	8	13	8	15	4	.....	.....	177	6					
2	XP	Box, End Doors: Width 9'6" & Height 8'6". Removable Containers.....	A606	29010-29024	59	9	5	9	9	67	10	9	11	10	8	12	1	14	14	9	27	8	6	5487	178	15	
3	XP	Box, End Doors: Width 9'6" & Height 8'6". Removable Containers.....	A606	29300-29314	59	9	5	9	9	67	10	9	11	10	8	12	1	14	14	9	27	8	6	5487	198	15	
4	RPL	Refrig., End Door, (Contact Owner Prior to Attempting Repairs to Car Body)	R470	29500-29508	51	3	9	6	9	57	6	10	7	10	8	8	4	13	11	14	5	2	8	10	4621	263	8
5	LF	Special.....	L007	36000-36002	53	.....	10	6	.....	58	4	.....	.....	10	6	3	6	3	6	4	10	.....	.....	.....	220	3
6	FM	Flat, Two 6-Wheel Trucks, Axle Spac. 4'6", Truck Ctrs. 36'0".....	F402	38021-38694	54	.....	10	6	.....	57	4	.....	.....	10	7	4	2	4	2	8	9	.....	.....	.....	330	2
7	FW	Flat, Well, Two 4-Wheel Trucks.....	F261	38851-38854	46	8	9	.....	10	51	9	.....	.....	10	1	3	10	4	1	4	2	.....	.....	.....	261	4
8	FW	Flat, Well, Four 4-Wheel Trucks.....	F461	38860-38861	47	8	9	4	.....	69	8	.....	.....	10	8	11	2	4	8	11	2	.....	.....	.....	590	2
9	FW	Flat, Well, Four 4-Wheel Trucks, Axle Spac. 5', Truck Ctrs. 40'4", Must Move in Special Train Service When Loaded, Rear of Train When Empty.....	F461	38865-38867	47	8	9	4	1	8	67	3	10	8	8	3	5	11	6	596	1
10	FW	Flat, Four 4-Wheel Trucks, Axle Spac. 5'10", Truck Ctrs. 33'9".....	F461	38870-38885	9	10	9	10	.....	64	1	.....	.....	10	8	8	11	4	1	10	1	.....	.....	.....	512	16
11	FW	Flat, Well, Four 4-Wheel Trucks.....	F461	38886-38893	9	10	9	10	.....	59	5	.....	.....	10	6	8	8	4	1	9	10	.....	.....	.....	510	7
12	FD	Flat, Four 4-Wheel Trucks, Axle Spac. 5'4", Truck Ctrs. 53'0".....	F432	39800-39809	72	6	10	2	2	6	79	6	10	2	4	11	4	11	8	4	526	3
13	FD	Flat, Two 6-Wheel Trucks, Axle Spac. 5'0", Truck Ctrs. 40'0".....	F433	39810-39832	57	9	9	2	1	61	2	.....	.....	10	4	1	4	3	15	6	.....	.....	.....	394	6	
14	FD	Flat, Four 4-Wheel Trucks, Axle Spac. 5'4", Truck Ctrs. 47'0".....	C	F434	39833-39847	71	3	9	2	2	77	1	9	2	4	11	4	11	15	6	440	2
15	FD	Flat, Four 4-Wheel Trucks, Axle Spac. 5'10", Truck Ctrs. 52'6".....	F434	39650-39655	77	10	9	3	2	5	83	9	9	3	5	4	5	4	7	11	505	2
16	FD	Flat.....	F421	39850	77	10	9	3	2	5	82	10	10	8	5	4	5	4	7	11	505	1
17	FMS	Flat, Four 6-Wheel Trucks, Axle Spac. 4'6", Truck Ctrs. 33'0".....	F421	39911	40	.....	10	8	.....	70	8	.....	.....	10	8	4	3	4	3	7	5	.....	.....	.....	767	1
18	FMS	Flat, Four 6-Wheel Trucks, Axle Spac. 4'6", Truck Ctrs. 33'0".....	F421	39912-39913	50	.....	10	8	.....	70	8	.....	.....	10	8	4	3	4	3	7	5	.....	.....	.....	772	2
19	FMS	Flat.....	F421	39915-39917	50	.....	10	8	.....	70	6	.....	.....	10	8	4	3	4	3	4	3	.....	.....	.....	750	3
20	FMS	Flat, Four 6-Wheel Trucks, Axle Spac. 4'6", Truck Ctrs. 33'0".....	F421	39918-39929	50	.....	10	8	.....	70	9	.....	.....	10	4	3	4	3	7	10	.....	.....	.....	778	3	
21	FM	Flat, Four 4-Wheel Trucks, Axle Spac. 6'0", Truck Ctrs. 36'0".....	F401	39940-39941	50	.....	10	.....	.....	66	4	.....	.....	10	5	4	3	4	3	4	3	.....	.....	.....	630	2
22	FMS	Flat, Two 6-Wheel Trucks, Axle Spac. 8'6", Truck Ctrs. 46'3".....	F423	39980-39999	68	.....	10	5	.....	72	10	.....	.....	10	5	4	1	4	1	4	1	.....	.....	.....	373	16
23	FMS	Flat, Two 6-Wheel Trucks, Axle Spac. 5'6", Truck Ctrs. 46'3", Chain Tie Down, COFC.....	F423	40000-40100	68	.....	10	3	.....	72	10	.....	.....	10	5	3	9	4	.....	4	1	.....	.....	.....	394	94
24	FMS	Flat, Two 6-Wheel Trucks, Axle Spac. 5'6", Truck Ctrs. 46'3", Chain Tie Down, COFC.....	F423	40101-40244	68	.....	10	5	.....	72	10	.....	.....	10	5	4	1	4	1	4	1	.....	.....	.....	394	139
25	FMS	Flat, Two 6-Wheel Trucks, Axle Spac. 5'6", Truck Ctrs. 46'3", Chain Tie Down, COFC.....	F423	40245-40546	68	2	10	5	.....	72	10	.....	.....	10	5	4	1	4	1	4	1	.....	.....	.....	394	301
26	FMS	Flat, Two 6-Wheel Trucks, Axle Spac. 5'6", Truck Ctrs. 46'3", Chain Tie Down, COFC.....	F423	40569-40573	68	.....	10	5	.....	72	10	.....	.....	10	5	4	2	4	2	4	2	.....	.....	.....	394	5
27	FMS	Flat, Chain Tiedown, COFC.....	C	F423	41000-41092	68	10	6	72	6	10	6	4	2	4	2	4	2	263	89
28	FMS	Flat.....	C	F323	41045, 41048, 41028-41029	68	10	6	72	6	10	6	4	2	4	2	4	2	263	4
29	FMS	Flat.....	C	F223	41093-41185	68	10	6	72	6	10	6	4	2	4	2	4	2	263	84
30	FMS	Flat.....	C	F323	41058, 41110, 41112, 41162, 41165, 41171-41172, 41177-41178	68	10	6	72	6	10	6	4	2	4	2	4	2	263	9
31	FMS	Flat.....	C	F223	41188-41256	89	10	6	72	6	10	6	4	2	4	2	4	2	263	70
32	FMS	Flat, Chain Tiedown, COFC.....	C	F226	42008-42090	89	9	6	93	6	9	6	4	3	4	3	4	3	263	94
33	FMS	Flat.....	C	F226	42094-42187	89	9	6	93	6	9	6	4	3	4	3	4	3	263	94
34	FMS	Flat.....	C	F226	42188-42220	89	9	6	93	6	9	6	4	3	4	3	4	3	263	33
35	FMS	Flat.....	C	F226	42221	89	9	6	93	6	9	6	4	3	4	3	4	3	263	1
36	FMS	Flat.....	C	F226	42222-42258	89	9	6	93	6	9	6	4	3	4	3	4	3	263	35
37	FMS	Flat.....	C	F226	42257	89	9	6	93	6	9	6	4	3	4	3	4	3	263	1
38	FMS	Flat.....	C	F226	42258-42337	89	9	6	93	3	9	6	4	3	4	3	4	3	263	76
39	FMS	Flat, Chain Tiedown, COFC.....	C	F726	42334-42535	89	3	9	4	.....	94	8	.....	.....	9	10	3	5	4	4	4	.....	.....	.....	286	182
40	FMS	Flat.....	C	F228	42334	89	9	6	94	8	9	4	4	3	4	4	4	3	263	1
41	FMS	Flat.....	C	F428	42335, 42336-42353	89	2	9	4	94	8	9	4	4	3	4	4	4	3	286	19
42	FC	Flat, COFC.....	C	P882	48679-48687	89	4	9	.....	93	10	.....	.....	9	11	3	5	3	6	3	6	.....	.....	.....	220	9
43	FC	Flat.....	P882	48688	89	.....	9	.....	.....	93	10	.....	.....	9	11	3	5	3	6	3	6	.....	.....	.....	220	1
44	FC	Flat.....	P882	48689	89	4	9	.....	.....	93	10	.....	.....	9	11	3	5	3	6	3	6	.....	.....	.....	220	1
45	FC	Flat.....	P882	48690	89	4	9	.....	.....	93	10	.....	.....	9	11	3	5	3	6	3	6	.....	.....	.....	220	1
46	FC	Flat.....	P882	48691	90	1	8	7	.....	93	10	.....	.....	9	11	3	5	3	6	3	6	.....	.....	.....	220	1
47	FC	Flat.....	P882	48692	89	4	8	7	.....	93	10	.....	.....	9	11	3	5	3	6	3	6	.....	.....	.....	220	1
48	FC	Flat.....	P882	48693	89	4	9	.....	.....	93	10	.....	.....	9	11	3	5	3	6	3	6	.....	.....	.....	220	1
49	FC	Flat.....	P882	48694-48699	89	4	8	7	.....	93	10	.....	.....	9	11	3	5	3	6	3	6	.....	.....	.....	220	6
50	FC	Flat.....	P882	48700	89	4	9	.....	.....	93	10	.....	.....	9	11	3	5	3	6	3	6	.....	.....	.....	220	1
51	FC	Flat.....	P882	48701	89	4	9	.....	.....	93	10	.....	.....	9	11	3	5	3	6	3	6	.....	.....	.....	220	1
52	FC	Flat.....	P882	48702-48703	89	4	9	.....	.....	93	10	.....	.....	9	11	3	5	3	6	3	6	.....	.....	.....	220	2
53	FC	Flat.....	P882	48704-48706	89	.....	9	.....	.....	93	10	.....	.....	9	11											

APPENDIX G

SPECIAL-PURPOSE RAILCARS

LISTING OF TRAILER TRAIN EQUIPMENT SHOWING LENGTH, WIDTH, HEIGHT, LIGHT WEIGHT, LOAD LIMIT AND TYPE OF DRAFT GEAR. ALSO "REMARKS" PERTAINING TO THE OVERALL CONFIGURATION, SPECIAL TIEDOWN DEVICES, AND SPECIFIC PURPOSE OF EACH TYPE OF CAR.

(The following information is extracted from Trailer Train Company Equipment Brochure.)

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Type	Length over end sills	Width	Height	Lt. weight	Load limit	Draft gear	Remarks
TTX	49'-4 ^{3/4} "	8'-2"	3' - 5 ^{1/8} "	57,000	153,000(F30D) *112,000 (F30G)	Conv.	1
TTX	75'-0"	8'-2"	3' - 5 ^{5/8} "	76,300 to 82,000	**128,000 to 133,700	Cony.	2
TTX	85'-0"	8'-2"	3' - 5 ^{1/2} "	67,500 to 92,000	*135,000	Conv.	3
TTX	89'-0"	8'-2" to 9'-0"	3' - 3" to 3' - 5 ^{1/2} "	63,000 to 82,500	135,000	Conv.	4
ATTX	75'-0"	8' - 10 ^{1/2} "	3' - 5 ^{5/8} "	72,000 to 78,000	**132,000 to 137,000	Conv.	4
BTTX	89'-0"	8'-2" to 9'-0"	2' - 7 ^{1/2} " to 3' - 5 ^{1/2} "	54,000 to 82,500	**116,000 to 135,000	Conv. & Hydr.	6
CTTX	85'-0"	8'-2"	3' - 5 ^{1/2} "	67,500 to 92,000	*135,000	Conv.	7
CTTX	89'-0"	8'-2" to 9'-0"	2' - 7 ^{1/2} " to 3' - 5 ^{1/2} "	54,000 to 82,500	**116,500 to 135,000	Conv. & Hydr.	7
ETTX	Same as CTTX, above.						8
FTTX	60'-0"	10'-6"	3'-6" & 3' - 8 ^{3/8} "	59,000 & 67,000	151,000 & 153,000	Hydr.	9
FTTX	89'-0"	8'-2" to 9'-0"	3' - 3" to 3' - 5 ^{1/2} "	63,000 to 82,500	135,000	Cony. & Hydr.	10
FTTX	89'-4"	9'-0"	3' - 6"	65,000 apprx.	130,000	Hydr.	11
GTTX	85'-0"	8'-4"	3' - 1 ^{1/2} "	68,400	135,000	Cony.	12
GTTX	89'-4"	8'-8"	3' - 1 ^{1/2} "	70,600	135,000	Conv,	13
HTTX	60'-0"	10'-6"	3' - 8 ^{3/8} "	70,000	150,000	Hydr.	14
ITTX	89'-0"	8'-6"	3' - 5 ^{1/2} "	74,800	135,000	Hydr.	15
ITTX	89'-0"	8'-6"	3' - 3 ^{1/2} "	82,500	135,000	Hydr.	15
ITTX	89'-0"	8'-6"	3' - 3"	72,800	135,000	Hydr.	15

*See remarks number 7.

** Load limits vary depending upon Light Weight of car.

Type	Length over end sills	Width	Height	Lt. weight	Load limit	Draft gear	Remarks
ITTX	89'-4"	8'-6"	3' - 6"		130,000	Hydr.	16
JTTX	89'-0"	8'-2" to 9'-0"	3' - 3 $\frac{1}{2}$ " to 3' - 5 $\frac{1}{2}$ "	63,000 to 82,500	135,000	Cony. & Hydr.	17
JTTX	89'-0"	8'-2" to 9'-0"	2' - 7 $\frac{1}{2}$ "	54,000 to 62,500	**118,000 to 137,000	Conv. & Hydr.	17
KTTX	89'-0"	Same as JTTX				Hydr.	18
LTTX	89'-0"		2' - 7 $\frac{1}{2}$ "	54,000 to 62,500	**118,000 to 137,700	Conv.	19
MTTX	60'-0"	10'-6"	3' - 8 $\frac{3}{8}$ "	67,000& 70,000	153,000 & 150,000	Hydr.	20
MTTX	85'-0"	8'-2"	3' - 5 $\frac{1}{2}$ "	67,500 to 70,500	185,00	Conv.	20
OTTX	60'-0"	10'-6"	3' - 8 $\frac{3}{8}$ "	69,000 to 71,000	**149,000 151,000	Hydr.	#21
PTTX	60'-0"	10'-6"	3' - 8 $\frac{3}{8}$ "	75,000	145,000	Hydr.	#22
RTTX	89'-0"	Same as JTTX					#23
STTX	85'-0"						#24
XTTX	89'-0"	8'-2"	3' - 5 $\frac{1}{2}$ "	73,300	135,000	Conv.	#25
XTTX	89'-0"	8'-8"	3' - 1 $\frac{1}{2}$ "	70,600	*135,000	Cony.	#26
ZTTX	85' -0"	8'-2"	3' - 5 $\frac{1}{2}$ "	67,500 to 70,500	*135,000	Cony.	#27
TTAX	89'-4"	9'-0"	3' - 5 $\frac{1}{2}$ "	68,500	151,000	Hydr.	8
TTBX	89'-4"	8'-6"	3' - 6"	.....	130,000	Hydr.	9
TTCX	89'-4"	9'-0"	3' - 5 $\frac{1}{2}$ "	64,500	155,500	Hydr.	0
TTDX	89'-4"	8'-6"	3' - 6"	.....	130,000	Hydr.	1
TTHX	89'-0"	8'-6"	3' - 5 $\frac{1}{2}$ "	74,800	135,000	Hydr.	1
TTHX	60'-0"	10'-6"	3' - 8 $\frac{3}{8}$ "	69,000	151,000	Hydr.	2

Type	Length over end sills	Width	Height	Lt. weight	Load limit	Draft gear	Remarks
TTKX	89'-4"	8'-6"	3'-6"	.....	130,000	Hydr.	3
TTRX	89'-4"	8'-6"	3'-6"	.....	130,000	Hydr.	4
TTX-101	89'-0"	9'-0"	3' - 5 $\frac{1}{2}$"	.....	130,000	Hydr.	35
TTX-102	89'-0"	9'-1"	3'-6"	.....	130,000	Conv.	36
TTX-103	89'-0"	9'-0"	3' - 5 $\frac{1}{2}$"	.....	130,000	Conv.	37
TTX-104	89'-0"	9'-0"	3' - 5 $\frac{1}{2}$"	.....	130,000	Conv.	38

REMARKS

1. (TTX) These cars are equipped with one hitch for the transportation of one trailer up to 43 feet in length. The underframe is cast steel with a wooden floor. Conventional draft gears are used for end-of-car cushioning. Cars marked F30CG have a "Starred Load Limit."
2. (TTX) The underframe on the majority of 75 foot cars is an all welded steel structure with a small percentage of cars (F39B) having a cast steel underframe. The welded steel and cast steel underframes have a fish belly center sill. Class F39, F39A, and F39C have a wood deck with an exposed steel center sill top cover plate extending the full length of the car. Class F39B has an all wood deck. Conventional friction draft gears are used for end-of-car cushioning. The Lightweight varies from 76,000 to 82,000 pounds depending upon the car used. The Load Limit varies from 128,000 pounds to 133,700 pounds accordingly. These cars are equipped with two hitches for the transportation of two trailers up to 35 feet in length.
3. (TTX) These cars are equipped with two hitches for the transportation of two trailers up to 40 feet in length. The underframe is an all welded steel structure with a fish belly center sill. Two types of floors are used, an all steel floor and a combination wood and steel floor. A conventional draft gear is used for end-of-car cushioning. The side sills are utilized as outside trailer guide rails, and extend 8 inches above the deck of the car. The side sills are also stress carrying members of the underframe. Classes F85D, F85E, and F85F are equipped with auxiliary guide rails which when removed, increase the width between the guide rails to 8 feet 6 inches. All cars have (*)Starred Load Limit except F85M which has a Load Limit of 128,000 lbs.
4. (TTX) Standard deck cars in trailer service equipped with two hitches for the transportation of two trailers, one up to 45 feet in length and one up to 40 feet in length. These cars consist of two basically different types of flat cars, a standard deck and a low deck car. The underframe of these cars is an all welded steel structure with a fish belly center sill and all steel floor. Eighty-nine foot cars in trailer service (cars equipped with hitches use conventional draft gears for end-of-car cushioning. Eighty-nine foot cars equipped with auto racks, or equipped for saddleback service, military service or autoframe service use hydraulic draft gears for end-of-car cushioning. Hitches and container supports are cushioned when used on cars having friction type gears. F9OHS and F9OPHS are equipped with hydraulic sliding sills. The letter "H" in class denotes car equipped with hydraulic draft gears.
5. (ATTX) These cars are equipped with continuous tiedown loops at the center of the car and tiedown rails at the sides, for the transportation of small vehicles such as army trucks, jeeps, mail trucks, and other general commodities. The underframe on the majority of 75 foot cars is an all welded steel structure with a small percentage of cars (F39B) having a cast steel underframe. The welded steel and cast steel underframes have a fish belly center sill. Class F39, F39A, and F39C have a wood deck with an exposed steel center sill top cover plate extending the full length of the car. Class F39B has an all wood deck. Conventional friction draft gears are used for end-of-car cushioning.
6. (BTTX) Standard or low deck cars equipped with bilevel auto racks. 89-foot cars equipped with auto racks or equipped for saddleback service, military service or autoframe service use hydraulic draft gears for end-of-car cushioning. Hitches and container supports are cushioned when used on cars having a friction type gear. F89OHS and F89PHS classes are equipped with hydraulic sliding sills. These cars consist basically of two different types of flatcars, a standard deck and a low deck car. The underframe of these cars is an all welded steel structure with a fish belly center sill and all steel floor.
7. (CTTX) These cars are equipped with special devices for the transportation of two 40 foot containers. The underframe is an all welded steel structure with a fish belly center sill. Two types of floor are used, an all steel floor and a combination wood and steel floor. A conventional draft gear is used for end-of-car cushioning. The side sills are utilized as outside trailer guide rails, which extend 8 inches above the deck of the car. The side sills are also stress carrying members of the underframe. Note, all cars listed in tables have (*) Starred Load Limit except the F85M which has a Load Limit of 128,000 pounds.
8. (ETTX) Standard or low deck car equipped with elevating trilevel auto racks. The underframe is an all welded steel structure with a fish belly center sill and all steel floor. Eighty-nine foot cars equipped with auto racks use hydraulic draft gears for end-of-car cushioning.
9. (FTTX) Auto Frame Cars. Same basic car as described in Remark number 20, but supplied with special tiedown equipment for the transportation of automobile frames. The underframe is all welded steel structure with a fish belly center sill. Wood deck is treated oak. Hydraulic draft gears are used for end-of-car cushioning.
10. (FTTX) Standard flush deck car equipped with special tiedown equipment for transportation of automobile frames. Eighty-nine foot cars used for saddleback service, military service or autoframe service use Hydraulic draft gears for end-of-car cushioning. The underframe of this car is an all welded steel structure with a fish belly center sill and all steel floor.
11. (FTTX) 89 foot 4 inch flush deck car equipped with special tiedown equipment for the transportation of automobile frames. The underframe is an all welded steel structure with an all welded steel floor. Cars equipped for autoframe service use hydraulic draft gears for end-of-car cushioning. This car provides a clear loading area 9 feet 0 inch wide by 89 feet 4 inches long.
12. (GTTX) 85 foot and 89 foot cars which are equipped with two hitches for the transportation of two trailers up to 40 feet in length. These cars have a center sill which extends 8 inches above the deck. Attached to the center sill on each side is a cushioned rub rail which acts as an inner guide rail. The underframe consists of a fish belly center sill with cross members. No side sills are used on the car. The floor is a steel box section, one section on each side of the center sill with longitudinal floor stringers enclosed.
13. (GTTX) Same as Remark number 12.
14. (HTTX) This car is the same basic car as described in Remark number 20, except that this car is equipped with special heavy duty tiedown anchors and chain assemblies contained in channels along the sides of the car and adjacent to the center sill on each side. Each outboard channel contains nine tiedown anchors while each inboard channel contains ten tiedown anchors. The movable and retractable tiedown anchors are equipped with chain assemblies having a load binder, heavy duty compression unit, adjustable grab hook and 1/2 inch alloy chain with a working load limit of 11,250 lbs (proof test 27,500 lbs). This type of car, HTTX, replaces type TTHX as the 60 foot heavy duty tiedown car.
15. (ITTX) Standard deck cars equipped with special foldaway pedestals and sixty-two movable ratchet type winches with 3/8 inch alloy chains having a working load limit of 6,600 lbs (proof test 18,000 lbs), contained in channels. These cars are used in the transportation of trailer tractors loaded "saddleback" style. The underframe is an all welded steel structure with a fish belly center sill and all steel floor. Hydraulic draft gears are used for end-of-car cushioning and hydraulic sliding sills.
16. (ITTX) Eighty-nine foot 4 inches flush deck cars equipped with special adjustable and foldaway pedestals 2 feet 0 inch high and 2 feet 0 inch long Tiedown equipment consists of sixty-two movable ratchet type winches with 3/8 inch x 10 feet long alloy chains having a working load of 6,600 lbs (proof test 18,000 lbs) contained in channels. These cars are used in the transportation of trailer tractors loaded "saddleback" style.
17. (JTTX) These cars consist of two basically different types of flat cars. The underframes of these cars are an all welded steel structure with

a fish belly center sill and all steel floor. Miscellaneous devices are applied by members for special services. Cars in trailer service use conventional draft gears. Cars equipped with auto racks, or equipped for saddleback service, military service or autoframe service use hydraulic draft gears for end-of-car cushioning.

18. (KTTX) Same as Remark number 4. These cars are standard or low deck cars with hinged end and trilevel auto racks.

19. (LTTX) These cars are low deck cars in trailer service equipped with two hitches for the transportation of two trailers up to 40 feet in length. Conventional draft gears for end-of-car cushioning.

20. (MTTX) (60 feet) The underframe is an all welded steel structure with a fish belly center sill. The wood deck is treated oak. Hydraulic draft gears are used for end-of-car cushioning. The basic car is the General Purpose Car. This car has side and end stake pockets, lading strays anchor along the side of the car, and on each side near the longitudinal center line of the car. The securements to the underframe of the side angles and longitudinal steel members adjacent to the center sills are so designed that these members can be lowered for the installation of special tiedown channels for the Agriculture and Heavy Duty Equipment Cars. 85 foot cars are equipped with special devices, side stake pockets, sixteen per car, and used for the transportation of up to 80 foot lengths of pipe. Conventional draft gears are used on these cars for end-of-car cushioning.

21. (OTRX) Agricultural Equipment Flat Car. Same basic car as described in Remark number 20, except car is equipped with special tiedown channels along the sides of the car and adjacent to the center sill on each side. Each outboard channel contains twenty winches, while each inboard channel has twelve winches. The movable and retractable ratchet winches are equipped with chain tiedown assemblies with 3/8 inch alloy chain having a working load limit of 6,600 pounds (proof test 18,000 lbs).

22. (PTTX) Bulkhead Flat Cars. This is the same basic car as described in remark number 20, (60 foot), but with a bulkhead applied near each end of the car for the transportation of wallboard, plywood, etc. In addition these cars have special lading strap anchors.

23. (RTTX) Basically the same car as in remark number 4. These are standard or low cars equipped with trilevel auto racks.

24. (STTX) These cars are equipped with hitches and assigned to Freight Forwarders. The underframe is all welded steel structure with a fish belly center sill. Two types of floors are used, an all steel floor and a combination wood and steel floor. Conventional draft gears are used for end-of-car cushioning. The side sills are utilized as outside trailer guide rails, which extend 8 feet above the deck of the car. The side sills are also stress carrying members of the underframe.

25. (XTTX) Standard deck cars equipped with four hitches for the transportation of 28 foot trailers or two trailers, one up to 45 feet and one up to 40 foot in length. Conventional draft gears are used for end-of-car cushioning. The underframe of these cars is an all welded steel structure with a fish belly center sill and all steel floor.

26. (XTTX) The G-89 (89 feet) is equipped with four hitches for the transportation of three 27 foot 7 inch trailers or two trailers up to 40 foot in length. These cars have a center sill which extends 8 inches above the deck. Attached to the center sill, on each side, is a cushioned rub rail which acts as an inner guide rail. The underframe consists of a fish belly center sill with crossmembers. No side sills are used on this car. The floor is a steel box section, one section on each side of the center sill, with longitudinal floor stringers enclosed.

27. (ZTT,X) These cars are equipped with special side stake pockets, thirty per car, and used for the transportation of long poles. Conventional draft gears are used for end-of-car cushioning. The underframe is all welded steel structure with fish belly center sill. Two types of floor are used, on all steel floor and a combination wood and steel floor.

28. (TTAX) These cars are equipped with knock-down hitches, center rub rails, bridge plates, movable container pedestals and hydraulic draft gears. They may be loaded with two trailers, one up to 45 feet and one up to 40 feet in length or combination of various length containers from 20 feet to 40 feet. A combination of a trailer up to 40 foot long and a container up to 40 foot long may also be loaded. The underframe is an all welded steel structure with an all welded steel floor. The car provides a clear loading area 9 feet 0 inch by 89 feet 4 inches.

29. (TTEX) Car has a flush deck equipped with bilevel auto racks. Hydraulic draft gears are used for end-of-car cushioning. All welded steel underframe with an all welded steel floor.

30. (TTCS) Flush deck cars equipped with movable container pedestals for the transportation of various combinations of containers from 20 feet to 40 feet. Hydraulic draft gears are used for end-of-car cushioning. All welded steel underframe with all welded steel floor.

31. (TTDX) Flush deck car equipped with sixteen movable screw type winches with 1/2-inch x 9 feet long alloy chain having a working load limit of 11,250 lbs. (proof test 22,500 pounds). For the transportation of military vehicles loaded in a semi-saddleback style. Hydraulic draft gears are used for end-of-car cushioning. All welded steel underframe with all welded steel floor.

32. (TTHX) Same basic car as described in Remark number 20, but equipped with eighteen heavy duty chain assemblies with 1/2 inch alloy chain having a working load limit of 11,250 pounds (proof test 27,500 pounds). These chain assemblies are attached to castings which are retained in the side stake pockets of the car. There are nine per side, three at the center of the car and three over each truck. This type of car is still in service but has been replaced by the HTTX. See Remark number 14.

33. (TTKX) Hinged End Trilevel Auto Rack on 89 foot 4 inch car equipped with hydraulic draft gears for end-of-car cushioning.

34. (TTRX) Trilevel Auto Rack on 89 foot 4 inch car equipped with hydraulic draft gears for end-of-car cushioning.

35. (TTX-101) This car has special hydraulic draft gear with 13 3/8 inches hydraulic travel and 1 5/8 inches rubber travel for car cushioning. Container and hitch cushioning from hydraulic draft gears. Handles 20 feet, 24 feet, 35 feet and 40 feet on adjustable pedestals. Contains hitches, guide rails and bridge plates for piggyback handling.

36. (TTX-102) Standard friction draft gears for end-of-car cushioning. Container cushioning consists of single rubber-pad-in-shear per pedestal. Fore and aft pedestals work in unison through a tie-rod (travel 14 inches). Hitch cushioning is accomplished by rubber pads in shear. Handles 20 foot and 40 foot containers on fixed pedestals. Car has hitches, guide rails, and bridge plates for piggyback handling.

37.-(TTX-103) This car has standard friction draft gears for end-of-car cushioning. Container cushioning is obtained from two rubber pads in series per pedestal and acting in shear. All pedestals act independently (travel 20 inches). Hitch cushioning is through rubber pads in shear. Handles 40 foot containers only on fixed pedestals. Hitches, guide rails, and bridge plates are available for piggyback handling.

38. (TTX-104) Standard friction draft gears for end-of-car cushioning. Container cushioning is obtained from rub-rails connected to rubberpads-in-shear having 14 inch travel. Hitch cushioning is through rubber pad in shear. Handles all lengths of containers on adjustable transverse bolsters. Hitches, guide rails and bridge plates are available for piggyback handling.

Section X. Loading and Tiedown Checklist For Vehicles on Chain Tiedown Flatcars

NOTE: Copies of this page should be distributed to loading teams.

- ☐ Make certain all hood latches are secured (to avoid wind damage).
- ☐ Leave at least 10 inches between vehicles.
- ☐ Check for proper brake wheel clearance (see fig 1, p. 2).
- ☐ Do not cross the chains.
- ☐ Use symmetrical tiedown patterns (multiples of 4).
- ☐ Secure tiedowns at approximately 45 degree angles.
- ☐ Seat and lock chain anchor or winch.
- ☐ Secure shackle in tiedown provision with wire tie or cotter pin.
- ☐ Pull chain tight and attach hook above the compression unit.
- ☐ Tighten chain.
- ☐ Use appropriate tools.
- ☐ Make sure chain is not kinked or binding.
- ☐ Secure hooks with wire or nylon tie straps.
- ☐ Make sure turnbuckles are wired or locked.
- ☐ Tighten jamnuts with two wrenches. Lower locking sleeves.
- ☐ Do not secure chains to axles or springs unless figure shows to.
- ☐ Make certain turrets and guns, radiator doors, side skirts, outriggers, crane booms, expansible van bodies, movable parts, and secondary loads are secured from extending up or out over the side of the flatcar during transport.

List 1: Extract from TEA PAM 55-19 (Tiedown Handbook for Rail Movements Version 6).

DODX 40000-Series Flatcar Checklist

Note: Copies of this page should be distributed to loading teams.

- ☐ Locate chain anchors as indicated.
- ☐ Extend turnbuckles.
- ☐ Position tanks on flatcar.
- ☐ Install shackles (and links (rings), if required, on tanks).
- ☐ Pull chain tight and attach claw hook.
- ☐ Tighten until 1/8 inch of rubber shows at compression unit.
- ☐ Ensure anchor locking tabs are down in recess.
- ☐ Wire tie shackle screw pins (or secure by other suitable means).
- ☐ Secure pintle lock with cotter pin, if the pintle is used.
- ☐ Two-wrench tighten jamnuts or properly apply locking device.
- ☐ Make certain turret and gun, radiator door, side skirts, and so forth, are secured from extending over the side of the flatcar.
- ☐ Lock turret and secure the handle.

B-6

List2: Extract from TEA PAM 55-19 (Tiedown Handbook for Rail Movements Version 6) and was developed for securing equipment on DODX 40000 series flatcars.



References

DOD 4500.9-R, DTR, Part III, *Mobility*

FM 55-9, *Unit Air Movement Planning*

2



AMC AIRCRAFT AIRLIFT CAPABILITIES

3

Definitions

Inter-theater operations
(between two theaters - strategic)



C-17

C-130

C-5

KC-10

KC-135

CARGO ONLY AIRCRAFT

CARGO / REFUELING AIRCRAFT

Intra-theater operations
(within a specific theater - tactical)



C-17

4



C-130

C-130 HERCULES PROFILE



- First Entered Service: April 1955
- Over 25 variations in use
- C-130J Model (Newest-Pictured)
Replacing Aging E Model C-130s

5

C-130 "Hercules"

- Primary Function: Tactical/ intra-theater airlift.
- Length: 97 feet, 9 inches
- Height: 38 feet, 3 in
Wingspan: 132 feet
- Maximum Takeoff Weight: 155,000 pounds
Range: 2,356 miles with maximum payload;
5,200 miles with no cargo



6

C-130 "Hercules" (Cont)

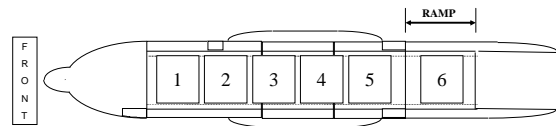
- Cargo Compartment:
Length 41 feet
Width 108 inches
Height 9 feet



- Rear ramp (one pallet position); length, 88 inches; width, 108 inches; height, 76 inches

7

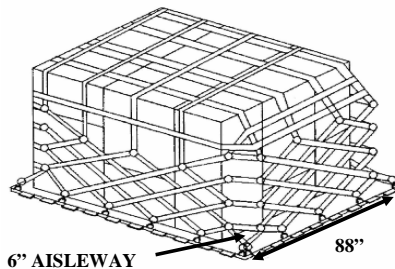
C-130 "Hercules" (Cont)



C-130 PALLET POSITIONS

8

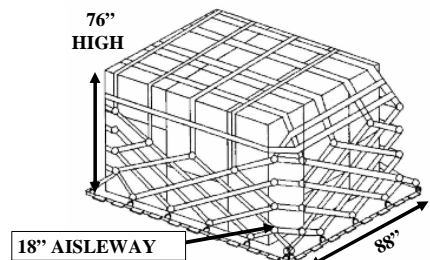
C-130 "Hercules" (Cont)



6" AISLEWAY
C-130 PALLET POSITIONS 3 & 4

9

C-130 "Hercules" (Cont)



C-130 RAMP PALLET POSITION #6

10

C-130 "Hercules" (Cont)



- Crew: **Five** (two pilots, a navigator, flight engineer and loadmaster); transports up to 92 troops, 64 paratroops, 74 litter patients, or six standard freight pallets. Maximum cargo capacity is 45,000 pounds

11

C-17 GLOBEMASTER III PROFILE



- Outsize Cargo Airlifter
- Strategic / Tactical Long Range, High Speed, Heavy Transport
- Provides Direct Delivery: Cargo - Pax
- Entered Service: Jan 1995
- Programmed to receive 120 by 2005

12

C-17 "Globemaster III"

- Primary Function: Cargo and troop transport
- Wingspan: 169 feet 10 inches (to winglet tips)
- Length: 174 feet
- Height: 55 feet 1 inch
- Range: Global with in-flight refueling. Maximum peacetime takeoff weight: 585,000 pounds



13

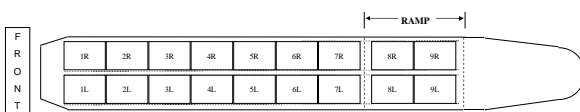
C-17 "Globemaster III" (Cont)

- Cargo Compartment:
- Length: 88 feet
- Width: 18 feet
- Height: 12 feet, 4 inches
- Cargo Load: 170,900 pounds of cargo (18 pallet positions)



14

C-17 "Globemaster III" (Cont)



PALLETS MUST BE ROTATED 90 DEGREES WHEN LOADING THIS CONFIGURATION

C-17 PALLET POSITIONS LOGISTICS CONFIGURATION

15

C-17 "Globemaster III" (Cont)

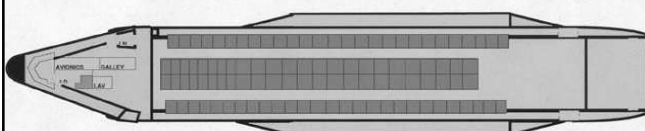


- Crew: Three (two pilots and one loadmaster)
- Load: 102 troops/paratroops; 48 litter and 54 ambulatory patients and attendants

16

C-17 "Globemaster III" (Cont)

TROOP SEATING DIAGRAM

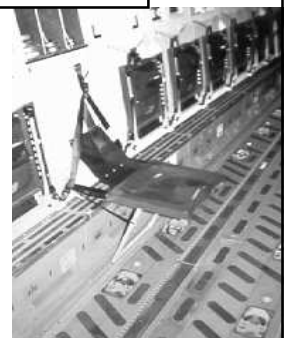


TROOP CONFIGURATION
BASIC
54 INTEGRAL SIDE SEATS
48 CENTER SEATS
102 TOTAL SEATS

17

C-17 "Globemaster III" (Cont)

CLOSE-UP VIEW OF TROOP SEAT



18

C-17 "Globemaster III" (Cont)



19

C-5 GALAXY PROFILE

- Outsize Cargo Airlifter
- Long Range, High Speed, Heavy Transport
- A Model Entered Service: June 1970
- B Model Entered Service: 1986



20

C-5 "Galaxy"

- Primary function: Outsize cargo transport
- Wingspan: 222.9 feet Length: 247.1 feet
 Height: 65.1 feet
- Range:
 4,400 miles (loaded)
 11,500 miles (unloaded)



21

C-5 "Galaxy" (Cont)

- Special ability to lower front or rear of aircraft for loading.
- Crew: 7 (pilot, co-pilot, two flight engineers and three loadmasters)



Forward kneeling

22

C-5 "Galaxy" (Cont)

C-5 KNEELED - FWD & AFT RAMP OPEN "DRIVE THRU CAPABILITY"



C-5 "Galaxy" (Cont)

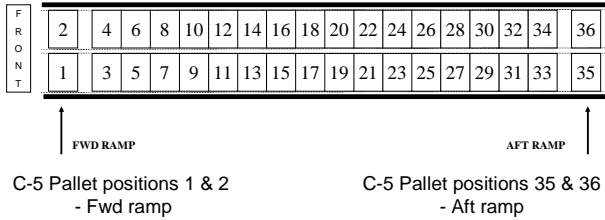
- Cargo compartment:
 Height: 13.5 ft
 Width: 19 ft
 Length: 143 ft, 9 inches
- Maximum cargo capacity: 170,000 lbs



24

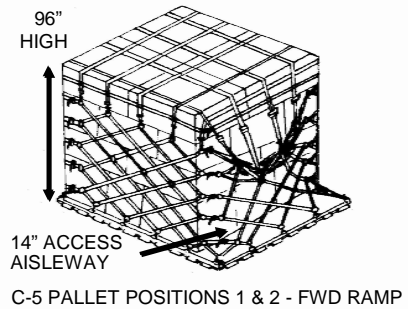
C-5 "Galaxy" (Cont)

C-5 Pallet Positions - 36



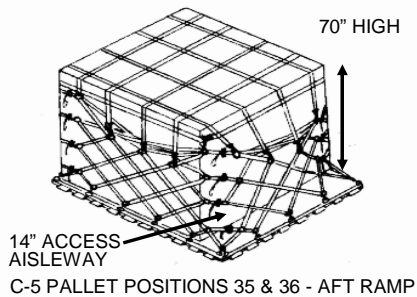
25

C-5 "Galaxy" (Cont)



26

C-5 "Galaxy" (Cont)



27

C-5 "Galaxy" (Cont)



28

KC-10 EXTENDER PROFILE



- Dual Role: Cargo / Passengers - Inflight Refueling
- Max. Fuel Load: 356,000 Lbs. (Six fuel cells)
- Max. Unrefueled Range: 4,400 NM With Cargo (85 S/T)
- Maximum Takeoff Weight: 590,000 Lbs.
- Entered Service: March 1981

29

KC-10A "Extender"

- Primary Function: Aerial tanker and transport
- Length: 181 feet, 7 inches
- Height: 58 feet, 1 inch
- Wingspan: 165 feet, 4.5 inches
- Maximum Takeoff Weight: 590,000 pounds
- Range: 4,400 miles (3,800 nautical miles) with cargo



30

KC-10 INFLIGHT REFUELING MISSION



31

KC-10A "Extender" (Cont)

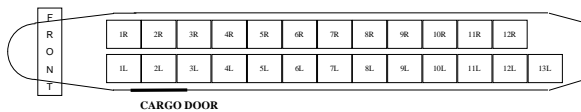
- Maximum Cargo Payload: 170,000 pounds
- Pallet Positions: 25
- Crew: Four (aircraft commander, pilot, flight engineer and boom operator)



32

KC-10A "Extender" (Cont)

KC-10 PALLET POSITIONS



- **NOTE:** Positions 1L & 1R are normally not used (seats installed) Pallet position 13L is not offered for cargo
- Pallets must be rotated 90 degrees to be loaded

33

KC-10A "Extender" (Cont)

CARGO COMPARTMENT - AFT



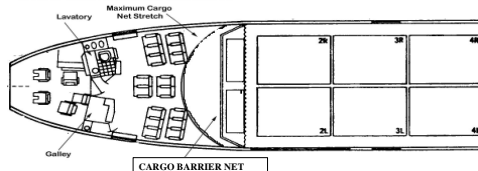
TROOP SEATS



34

KC-10A "Extender" (Cont)

CONFIGURATION CODE B



22 PALLET POSITIONS AVAILABLE

10 TROOP SEATS AVAILABLE

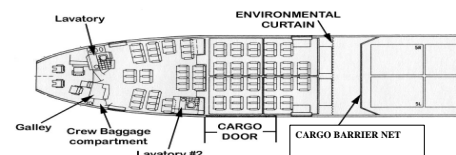
6 ADDITIONAL CREW MEMBERS

16 TOTAL SEATS

35

KC-10A "Extender" (Cont)

CONFIGURATION CODE D



16 PALLET POSITIONS AVAILABLE

69 TROOP SEATS AVAILABLE

6 ADDITIONAL CREW MEMBERS

75 TOTAL SEATS

36

KC-10A "Extender" (Cont)

KC-10 MHE MILITARY LOADER (TUNNER)



37

KC-10A "Extender" (Cont)

KC-10 MHE COMMERCIAL LOADER



38

SMALL AUSTERE AIRFIELD ACCESS
PROVIDES NEEDED FLEXIBILITY

C-17 CAPABILITY 10,000

C-5 CAPABILITY 850

FREE WORLD, EXCLUDING U.S.

39

Civil Reserve Air Fleet (CRAF)



40

CRAF (Cont)

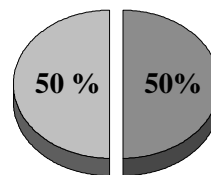
- **CRAF** is a voluntary contractual program designed to augment US military airlift forces with civil air carriers to support national defense emergency airlift requirements.



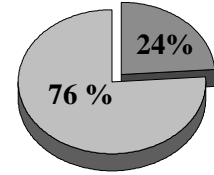
41

CRAF (Cont)

Strategic Capability



Cargo Lift Capability

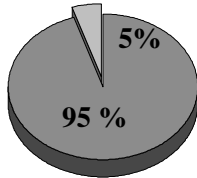


■ ORGANIC AIRLIFT
■ COMMERCIAL AIRLIFT

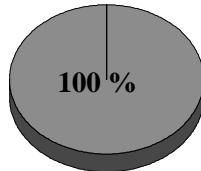
42

CRAF (Cont)

Passenger
Lift Capability



Aeromedical Evac
Lift Capability



■ ORGANIC AIRLIFT
■ COMMERCIAL AIRLIFT

43

CRAF (Cont)

CRAF OPERATIONAL STAGES

☎ STAGE I - Committed expansion to 77 aircraft

☎ STAGE II - Airlift Emergency - additional 182

☎ STAGE III - Military Emergencies up to an additional 544 aircraft available

NOTE: DOES NOT HAVE TO BE ACTIVATED IN STAGE ORDER

CRAF aircraft totals change quarterly.

44

CRAF (Cont)

- CRAF Operational Segments
 - International segment:
 - + Short range section
 - + Long range section
 - Aeromedical segment
 - National segment:
 - + Domestic & Alaska sections

45

C-130 PLANNING DATA

ACL: 25,000 lbs

Theater Airlift: Strategic and Tactical

CARGO COMPARTMENTLength: 624 in. Width: 123 in.¹ Height: 108 in.

Usable dimensions:

Length: 597 in. Width: 105 in. Height: 102 in.

PALLETIZED CARGO LOADING: Maximum six (6) 463L pallets with the following limitations when using HCU-7/E and HCU-15/C nets:

Pallet positions 1 thru 4 : 10,355 lbs. ea.^{2,3}Pallet position 5 : 8,500 lbs²Pallet position 6 (ramp) : 4,664 lbs^{2,4}

Height of pallet positions 1 thru 5 : 96 inches

Height of pallet position 6 : 76 inches

PASSENGER LOADING:

Web passenger seats (AE-2)	90
Paratroops	64
Full sidewall seats only.(CP-1)	42
MAXIMUM ON OVERWATER FLIGHTS (AE-2)	74

NOTES:

¹ With permanently installed dual rails, the maximum width for floor loaded cargo, rolling stock and tracked vehicles is 105 inches.

² Includes weight of pallet and nets (355 lbs).

³ Pallet positions 3 and 4 require a 6-inch access aisle down left side of pallet(s).

⁴ Pallet position 6 requires a 18-inch aisle (latrine access) down one side of pallet.



C-17 PLANNING DATA

ACL: 135,000 lbs

Intertheater Airlift: Strategic & Tactical

CARGO COMPARTMENT

Length: 1,075 in.

Width: 216 in.

Height: 148 in.^{1a}
162 in.^{1b}

Usable dimensions:

Length: 1022 in.

Width: 216 in.

Height: 158 in.^{1b}

PALLETIZED CARGO LOADING: Maximum eighteen (18) 463L pallets loaded in the logistics configuration (108" long by 88" wide) with following limitations when using HCU-7/E and HCU-15/C nets:

Pallet positions 1 thru 14: 10,355 lbs. ea.²Pallet positions 15-18 (ramp): 10,355 lbs. ea.²

Height of pallet positions 1 thru 18: 96 inches

PASSENGER LOADING:

Sidewall seats (permanent) 54 passengers

Center seats (additional seat kit) 48 passengers

Paratroops 102 passengers

MAXIMUM ON OVERWATER FLIGHTS 102 passengers

NOTES:

- 1
 - a. Forward/under the wing box. Fuselage stations 381 to 971.
 - b. Aft of the wing box. Fuselage stations 971 to 1164.
- 2 Includes weight of pallet and nets (355 lbs) and a total ramp weight not to exceed 40,000 pounds.



C-5A/B PLANNING DATA

ACL: 130,000 lbs

Intertheater Airlift: Strategic

CARGO COMPARTMENT

Length: 1,733 in.

Width: 228 in.

Height: 162 in.

Usable dimensions:

Length: 1,726 in.

Width: 228 in.

Height: 158 in.

PALLETIZED CARGO LOADING:

Maximum thirty-six (36) 463L pallets with following limitations when using HCU-7/E and HCU-15/C nets:

Pallet positions 3 thru 34:	10,355 lbs. ea. ¹
Pallet positions 1, 2, 35 and 36 (ramps):	7,500 lbs. ea. ^{1,2}
Height of pallet positions 1 thru 34:	96 inches
Height of pallet positions 35 and 36:	70 inches

PASSENGER LOADING:

Airline seats (troop compartment)	73 passengers
MAXIMUM ON OVERWATER FLIGHTS	73 passengers

NOTES:¹Includes weight of pallet and nets (355 lbs).²Pallet positions 1,2, 35 and 36 require a 14-inch access aisle down the outboard edge of the pallet(s).

KC-10A PLANNING DATA

Airlift Role ACL: 80,000 lbs

Dual Role ACL: 60,000 lbs

Intertheater Airlift: Strategic

CARGO COMPARTMENT:

Length: 1,508 in.

Width: 218 in.¹Height: 95 - 131 in.¹**Usable dimensions:**

Length: 1,416 in.

Width: 218 in.

Height: 102 in.¹**PALLETIZED CARGO LOADING:**

Maximum twenty-two (22) 463L pallets with following limitations when using HCU-7/E and HCU-15/C nets:

Pallet positions 2 thru 6 (left and right):	6,500 lbs. ea. ²
Pallet positions 7 thru 11 (left and right):	10,000 lbs. ea. ²
Pallet positions 12 (left and right):	6,500 lbs. ea. ²
Height of pallet positions 2 thru 10:	96 inches ¹
Height of pallet positions 11 and 12:	88 inches ¹ (65 in. wide)

The KC-10 has two 463L pallet/cargo configurations available:

Code B. 22 pallet positions available (2 L/R thru 12 L/R).

Code D. 16 pallet positions available (5 L/R thru 12 L/R).

PASSENGER LOADING:

Airline seats (code B)	10 passengers
Airline seats (code D)	69 passengers
MAXIMUM ON OVERWATER FLIGHTS	69 passengers

NOTES:

¹ Cargo door height limits all cargo to 96 inches above the pallet surface. The cargo compartment curvature restricts normal pallet building techniques. Refer to the pallet profiles illustrated in FM 55-9 or T.O. 1C-10(K)A-9.

² Includes weight of pallet and nets (355 lbs). All cargo and baggage must be palletized or placed on a 463L pallet subfloor.



B. CIVIL RESERVE AIR FLEET (CRAF):

1. CRAF represents approximately one-half of the AMC's total strategic war time airlift capability
 - a. 24% of the cargo capability
 - b. 95% of the passenger capability
 - c. 100% of strategic intertheater aeromedical capability
2. CRAF ACTIVATION (Information is updated monthly)
 - a. Stage I:

Purpose: Committed expansion. Up to 79 aircraft available on a 24-hour notice.
(USTRANSCOM CINC has activation authority)
 - b. Stage II:

Purpose: Airlift emergency. Up to 195 additional (total 274) aircraft available on a 24-hour notice.
(SECDEF has activation authority)
 - c. Stage III:

Purpose: Military emergencies. In addition to the Stage I & II aircraft, 383 additional aircraft available on a 48-hour notice, for a total of 657 aircraft.
(SECDEF issues activation order ONLY after president of congress declares national emergency)



3. CRAF AIRCRAFT TYPES AND CHARACTERISTICS

1. Wide-Body Aircraft:


- a. B747
 - 364 - 461 Passengers
 - 33 or 37 463L Pallets
 - 180,000 ACL
- b. DC-10
 - 380 Passengers
 - 30 463L Pallets
 - 176,000 ACL
- c. L-1011
 - 246 - 330 Passengers
 - No cargo version available for military use
 - 92,000 ACL
- d. B767
 - 152 - 207 Passengers, or 87 Litters w/41 ambulatory plus medical crew
 - No cargo version available for military use
 - 85,800 ACL
- e. MD-11
 - 320 Passengers
 - 35 463L Pallets
 - 195,600 ACL
- f. A310-300
 - 191 - 279 Passengers
 - No cargo version available for military use
 - 79,000 ACL

2. Narrow-Body Aircraft:

- a. DC-8
 - No longer utilized for passengers
 - 14 or 18 463L Pallets
 - 90,000 ACL
- b. B-707
 - 142 Passengers
 - 13 463L pallets
 - 90,000 ACL



Objective



- Know the roles and responsibilities of the different areas involved in the departure/arrival airfield operations process.

2

References

DOD 4500.0-R, DTR, Part III, *Mobility*

FM 55-9, *Unit Air Movement Planning*


FM 3-35.4, *Deployment Fort-to-Port*

FORSCOM/ARNG Reg 55-1, *Unit Movement Planning*

3


Overview

- Facilitating Agencies
- APOE Operations
 - Marshaling Area
 - Alert Holding Area
 - Call Forward Area
 - Ready Line / Loading Ramp Area
- APOD Operations



4

FACILITATING AGENCIES



PRES/SEC DEF	USTRANSCOM
AMC	CRE
UMC	A/DACG

5

Aerial Movement

- Most units will ship their equipment & supplies via ocean vessels to SPOD & airlift unit personnel to an APOD
- Selected units (airborne, light forces) plan for deploying both equipment & personnel by airlift.

6

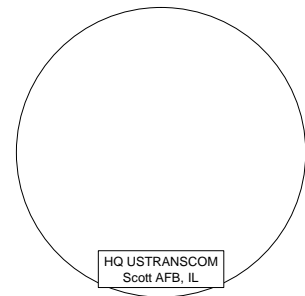
Deployment Authority

- The decision to deploy military forces originates with the PRES/SEC DEF
- The CJCS issues the deployment order
- Deployment order addressed to appropriate Unified Commands and the Services

7

USTRANSCOM

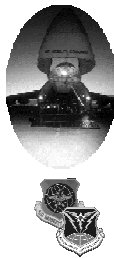
- USTRANSCOM provides global land, sea & air transport to deploy and sustain forces



8

Air Mobility Command (AMC)

- AMC is USTRANSCOM component command that provides strategic airlift
 - AMC uses organic and commercial airlift assets
 - AMC Contingency Response Element (CRE) coordinates loading & off-loading operations at aerial ports



9

Contingency Response Element (CRE)

- Provisional, deployed Air Mobility Command (AMC) element established at fixed, en route and deployed locations where AMC operational support is non-existent or insufficient
- Composed of mission support elements from various units (task organized)

Ref: FM 3-35.4, p.4-12

10

Contingency Response Element (CRE) cont

- Responsibilities
 - Act as primary USAF POC at airfield
 - Provides technical assistance
 - Obtains/relays airflow information
 - Control aircraft
 - Conducts JI with DACG
 - Validates load plans/pax manifests
 - Provides MHE/CHE when required
 - Controls and supervises load teams
 - Provides continuing onsite management of airfield operations including weather information, C3I, security and maintenance



11

Ref: FM 3-35.4, p.4-12

Deploying Unit Movement Instructions

- Deploying unit's higher headquarters issues movement orders/instructions based on CJCS & MACOM deployment orders/directives:
- Guidance may include:
 - Date/times for movement from HS to APOE
 - Equipment to deploy
 - Special logistical & soldier support instructions

12

UMC - Air Movement Responsibilities

- UMC
 - Primary installation POC for airlift operations and coordinating airlift requests
 - Maintains coordination with deploying unit, Army MACOM or ASCC, & AMC POC for aircraft departure times and mission changes
 - Coordinates (along with ITO) installation support for movement to and activities at APOE

13

Arrival/Departure Airfield Control Group A/DACG

- Mission is to coordinate and control the outloading and reception of units during deployment/redeployment
- Normally an ad hoc organization provided by a supporting installation
- Size and capabilities are mission dependent
- Task organized, consisting of non-deploying personnel and equipment
- Cargo Transfer Companies are best suited to perform this mission
- Installation providing A/DACG pre-designated by FORSCOM

14

Ref: FM 3-35.4, p.4-12 and L-1

A/DACG Assignments

Ref: FORSCOM/ARNG Reg 55-1 pg. 72

Installation	APOE Peacetime	APOE Mobilization	Installation	APOE Peacetime	APOE Mobilization
Fort Benning	Lawson AAF	Lawson AAF	Fort McCoy	Volk Field	Volk Field
Fort Bliss	Biggs AAF	Biggs AAF	Fort Mitchell	Mitchell Field	Mitchell Field
Fort Belvoir	Andrews AFB	Andrews AFB	Fort McPherson	Dobbins AFB	Dobbins AFB
Fort Bragg	Pope AFB	Pope AFB		Hartsfield-Jackson	Hartsfield-Jackson
Fort Buchanan	Roosevelt	Roosevelt		Intl	Intl
	Rds NAS	Rds NAS	Fort Meade	Dover AFB	Dover AFB
Fort Campbell	Campbell AAF	Campbell AAF	Fort Polk	Alexandria Intl	Alexandria Intl
Fort Carson	Peterson AFB	Peterson AFB	Fort Riley	Forbes Field	Forbes Field
Fort Dix	McGuire AFB	McGuire AFB	Fort Rucker	Eglin AFB	Eglin AFB
Fort Drum	Wheeler-Sack AAF	Wheeler-Sack AAF		Hurlburt Field	Hurlburt Field
Fort Eustis	Langley AFB	Langley AFB	Fort Sam Houston	Lackland AFB	Lackland AFB
Fort Hood	Robert Gray AAF	Robert Gray AAF	Fort Sill	Altus AFB	Altus AFB
Fort Huachuca	Davis-Montham AFB	Davis-Montham AFB		Lawton/Ft Sill	Lawton/Ft Sill
	Libby AAF	Libby AAF	Fort Stewart	Regional	Regional
Fort Irwin	Southern California Intl	Southern California Intl		Hunter AAF	Hunter AAF
Fort Jackson	Charleston AFB	Charleston AFB	Gowen Field	Robins AFB	Robins AFB
Fort Knox	Standiford Field	Standiford Field		Gowen Field	Gowen Field
	Wright-Patterson AFB	Wright-Patterson AFB	Camp Roberts	Mountain	Mountain
Fort Leonard Wood	Scott AFB	Scott AFB	Camp Shelby	Home AFB	Home AFB
Fort Lewis	Lambert Field	Lambert Field		Travis AFB	Travis AFB
	McChord AFB	McChord AFB		Gulport-Biloxi Intl	Gulport-Biloxi Intl
	Travis	Travis		Intl	Intl

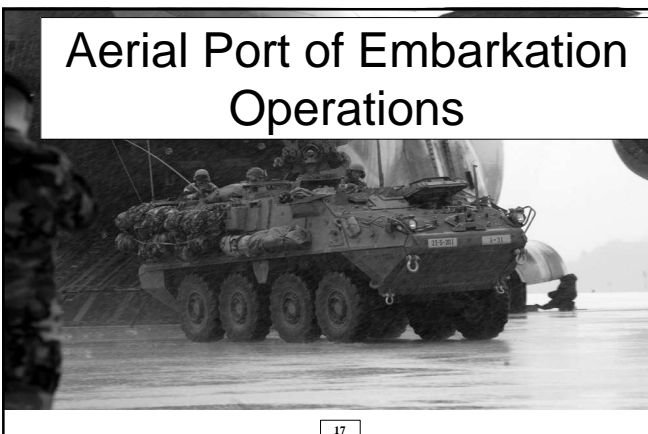
15

Arrival/Departure Airfield Control Group A/DACG (cont)

- Responsibilities
 - Control flow of troops/cargo at airfield
 - Act as unit's primary POC at airfield
 - Coordinate log support at airfield
 - Pre-inspect acft loads and documentation
 - Conduct Joint Inspection w/Air Force rep
 - Coordinate and control acft load teams
 - Coordinate and control MHE/CHE, as req'd
 - Compile and report statistical data

16

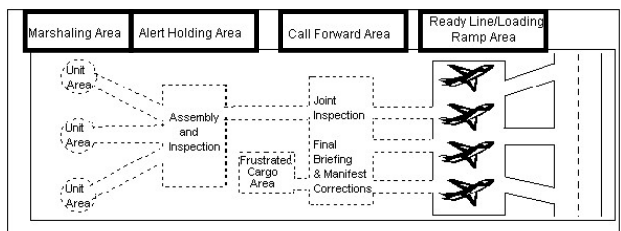
Aerial Port of Embarkation Operations



17

Notional APOE

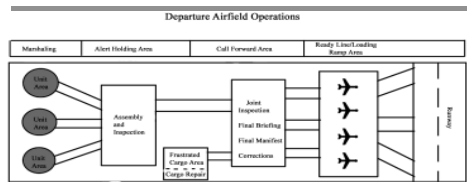
- Aerial Port of Embarkation consists of four functional areas



Ref: FM 3-35.4, p.4-11

18

Notional APOE Marshaling Area

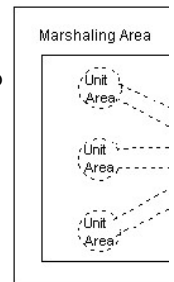


- Select equipment and supplies
- Documentation of Cargo and Personnel
- Initial Assembly
- Personnel Readiness
- Identify Troop Commander and Cargo Custodians

19

Marshaling Area

- **Marshaling area**
 - Located at or in the vicinity of the airfield
 - Location should not cause unnecessary congestion at the airfield or undue hardship to the deploying unit
 - Deploying unit area of responsibility
 - Unit conducts final preparations for air movement
 - DOD 4500.9R - Part III Mobility details requirements and procedures for marshaling of cargo



Ref: FM 3-35.4, p.4-13

20

Marshaling Area Responsibilities

- **Deploying units responsibilities** include:
 - Establish liaison with DACG
 - Perform preparation of vehicles & equipment (including HAZMAT and customs documentation)
 - Prepare passenger & cargo manifests
 - Assemble personnel, vehicles, supplies & equipment into plane loads (chalks)
 - Ensure planeload/troop commanders appointed, briefed & escorts assigned (if required)

Ref: FM 3-35.4, p.4-13

21

Troop Commander

- One per aircraft, normally the senior ranking individual
- Duties:**
 - Attend pre-flight passenger briefing
 - Check all passengers for unauthorized material which could present a flight hazard (eg ammunition, fuel, etc) - recommended that an amnesty box be established in Marshaling or Alert Holding Areas
 - Assume control of all passengers listed for movement on the flight and make sure all are informed of formations, expected departure and reporting time
 - Be readily available to the DACG at all times



22

Troop Commander (cont)

Duties (cont):

Perform a roll call prior to loading - report no-shows to DACG so manifest can be corrected

Ensure personnel have placed their baggage on the proper vehicle or 463L pallet for movement to the aircraft

Supervise passenger loading under the guidance of the Loadmaster (each individual appearing on the manifest boards the aircraft)

Brief passengers to secure belongings

If passenger removed from flight, ensure the passenger's baggage is also removed

Collect all weapons, magazines (if not empty) and unsecured/non-palletized ammunition before the anti-hijack briefing - brief the loadmaster on details of all ammunition carried

23

Troop Commander (cont)

Duties (cont):

- Conduct anti-hijack inspection of all assigned troops - certify completion of inspection on Block 6 of DD Form 2131 (Passenger Manifest)
- Maintain in-flight discipline of all passengers
- Control the issue of in-flight rations to troops
- Help maintain cleanliness and safety in the aircraft
- Coordinate en-route station requirements (including scheduled offload of passengers and another anti-hijack inspection)
- Brief passengers regarding local restrictions for en-route stops
- Coordinate billeting and food for en-route stops for unit personnel
- Designate guards for personnel effects and equipment left on plane during en-route stops

24

Troop Commander (cont)

Duties (cont):

- Ensure awareness and composition and location of any hazardous material on aircraft
- At destination maintain control of passengers and arrange assistance for offloading baggage and/or cargo as required
- Maintain and complete Planeload/Troop Commander's itinerary (details number of passengers, when, where and for how long the aircraft stopped enroute and details of any delays)

25

Cargo Custodian

Two per aircraft (identified as such as passenger manifest)

Duties:

- Before departure obtain copies of cargo manifest
- Familiarize themselves with properties of any hazardous material aboard the aircraft
- Be prepared to assist the flight crew in cargo related emergencies
- Know the priority of the cargo on board in case of the event of an en route offload (one custodian will remain with the cargo if any portion is off-loaded at an en route base - the other will remain with the aircraft)
- Make necessary arrangements to protect the cargo once the aircraft has landed - hand over cargo manifest to reception personnel

26

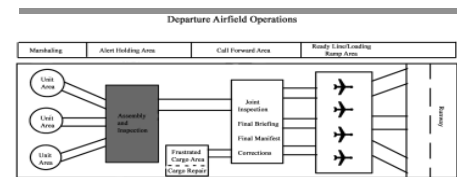
Marshaling Area Responsibilities (Cont)

- DACG responsibilities include:
 - Establish liaison with unit & CRE
 - Coordinate with CRE for USAF technical assistance for deploying unit
 - Call unit chucks forward to Alert Holding Area

Ref: FM 3-35.4, p.4-13

27

Notional APOE Alert Holding Area

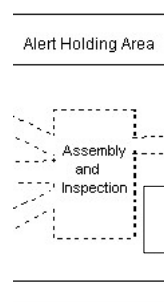


- Control Transferred (Unit to DACG)
- Final Preparation (including cargo and personnel documentation) and assembly of personnel, cargo and equipment into chucks (loads)

28

Alert Holding Area

- Alert Holding Area
 - DACG area of responsibility
 - Equipment, vehicle and passenger control area
 - Equipment & documentation is pre-inspected



Ref: FM 3-35.4, p.4-13

29

Alert Holding Area Responsibilities

- Deploying units responsibilities include:
 - Ensure chucks arrive in Alert Holding Area when scheduled
 - Completes final preparation and assembly or personnel, cargo and equipment into individual chucks
 - Provide DACG with passenger/cargo manifests, load plans and other required documentation
 - Correct any unit chalk discrepancies identified during pre-inspection then pass control of unit chucks to the DACG

Ref: FM 3-35.4, p.4-13/14

30

Alert Holding Area Responsibilities (Cont)

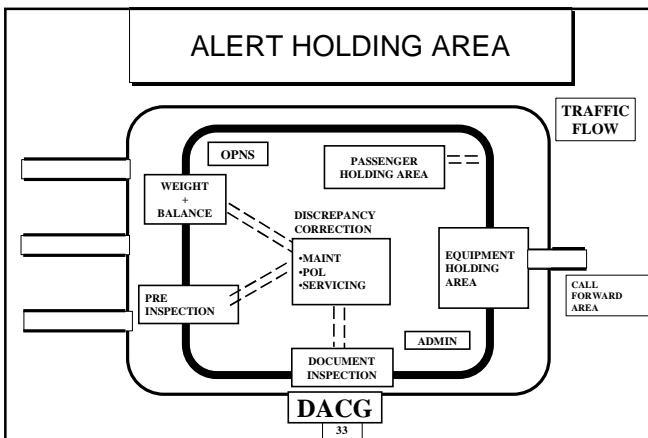
- DACG responsibilities include:
 - Ensure the unit loads arrive at the Alert Holding Area on time
 - Receives, inventories and controls aircraft loads as they arrive in the Alert Holding Area
 - Inspect chalks for completeness and correct preparation
 - Inspect documentation for accuracy & completeness
 - Inspect HAZMAT for proper loading and documentation
 - Verify accuracy of weight & center of balance
 - Establish a discrepancy correction area

Ref: FM 3-35.4, p.4-14

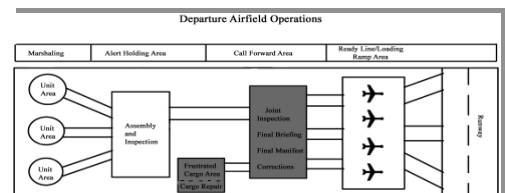
Alert Holding Area Responsibilities (Cont)

- DACG responsibilities include: (Cont)
 - Provide limited maintenance, POL & related services, as required to complete the out-loading mission
 - Coordinate MHE support as needed
 - Direct chalks to the Joint Inspection area (Call Forward Area)

32



Notional APOE Call Forward Area

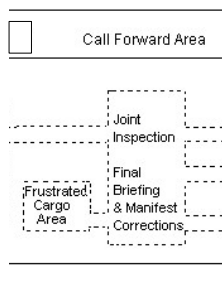


- Where Joint Inspection (DD Form 2133) between the deploying unit, the DACG and the CRE is conducted and discrepancies corrected
- Frustrated Cargo Area

34

Call Forward Area

- Call Forward Area
 - Dual area of responsibility between DACG & CRE
 - Used for Joint Inspection of deploying equipment & documentation



Call Forward Area

- Joint Inspection
 - Final check to ensure all cargo and equipment is properly prepared and documented for safe and efficient air shipment
 - Improperly prepared equipment will be sent to the Frustrated Cargo Area and will not be released for airlift until all discrepancies are corrected by the deploying unit
 - Any cargo sent to the Frustrated Cargo Area will have to be re-inspected before being accepted for further movement
 - Incomplete chalks will not be accepted for Joint Inspection (JI)

Ref: FM 3-35.4, p.4-14

Call Forward Area

Timelines



- Cargo and equipment loads will be available for JI six (6) hours prior to aircraft departure



- Personnel will be available for passenger briefings and manifest checks three (3) hours prior to aircraft departure

37

Call Forward Area Responsibilities

- **DACG responsibilities:**
 - Maintain communications with unit & CRE
 - Ensure unit passenger/cargo manifests are correct (final changes made)
 - Provides passenger holding area, if necessary
 - Ensure deploying unit adheres to the established movement time-tables
 - In coordination with deploying unit, ensure all discrepancies identified during joint inspection with CRE are corrected
 - Maintain final corrected copy of each passenger/cargo manifest and inspection record

38

Ref: FM 3-35.4, p.4-14

Call Forward Area Responsibilities (Cont)

- **DACG responsibilities:** (Cont)
 - Provide load team personnel & support equipment (MHE, pusher vehicle)
 - Ensure load team members are properly outfitted with safety equipment
 - Escort unit chinks to ready line & ensure all unit personnel are briefed on flight line safety procedures and requirements
 - Provide limited logistics support (fueling/ defueling, maintenance) for deploying units

Ref: FM 3-35.4, p.4-14/15

39

Pusher Vehicle

Any type of vehicle modified with a front mounted pintle hook

Allows the driver to have a direct view of the trailer as it is moved onto the aircraft.

Quicker and safer than having the driver back the trailer onto the aircraft



40

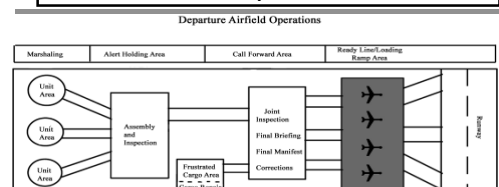
Call Forward Area Responsibilities (Cont)

- **CRE responsibilities** include:
 - Coordinate with DACG on any changes due to aircraft configuration or availability
 - Provide airflow information to the DACG
 - Conduct joint inspection with unit & DACG
 - Provide final passenger/driver briefing for on/offload procedures and for flight line safety
 - Provide team chief for each aircraft load team
 - Notify DACG when to dispatch unit chinks to the loading ramp/ready line area

Ref: FM 3-35.4, p.4-15

41

Notional Ready Line/Loading Ramp Area

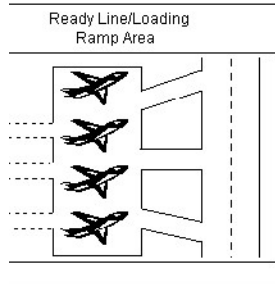


- Control of units transferred from DACG to CRE (AMC)
- Cargo isolated in separate holding area - no additions or deletions after Joint Inspection (if changed another JI required)
- Cargo and Personnel Loading
- Ramp Operations

42

Notional APOE -- Ready Line/Loading Ramp

- Ready Line/ Loading Ramp Area
- CRE area of responsibility
- CRE controls all passengers/cargo & stages chinks for aircraft loading



43

Ready Line / Loading Ramp Responsibilities

- Planeload or Troop Commander responsibilities
 - Controls aircraft passengers
 - Retains copy of final passenger/cargo manifest
 - Provide unit assistance, as required, to assist load master in securing vehicles
 - Ensures vehicle drivers follow loadmaster instructions for loading equipment

44

Ready Line / Loading Ramp Responsibilities (Cont)

- DACG responsibilities
 - Transfers control of chinks to the CRE
 - Provides load teams to assist in loading and securing aircraft loads
 - Maintains coordination with the deploying unit representative and the CRE

Ref: FM 3-35.4, p.4-15

45

Ready Line / Loading Ramp Responsibilities (Cont)

- **CRE responsibilities:**
 - Establish aircraft parking plan
 - Accept chinks from DACG & load aircraft
 - Ensure each chink is positioned to its aircraft
 - Ensure all drivers briefed on flight line safety
 - Maintain liaison with aircrew and DACG
 - Maintain communications with unit & DACG

Ref: FM 3-35.4, p.4-15

46

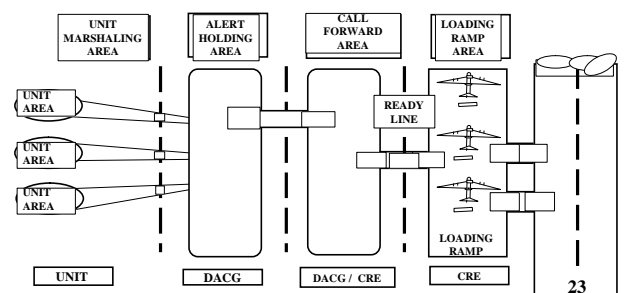
Ready Line / Loading Ramp Responsibilities (Cont)

- **CRE responsibilities** (Cont):
 - Coordinate with aircraft loadmasters & ensure that loads are placed aboard the aircraft in time to meet the scheduled departure
 - Provide & operate MHE, if required
 - Escort passengers to aircraft
 - Provide loadmaster with required copies of passenger/cargo manifests

Ref: FM 3-35.4, p.4-15

47

APOE Control Diagram



48

Aerial Port of Debarkation Operations



49

Arrival Airfield Control Group AACG

- Performs similar functions to DACG, except it is primarily concerned with offloading operations
- Prepositioned



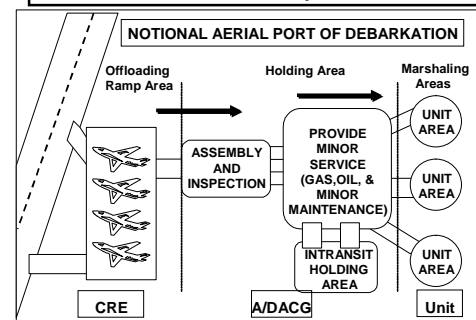
50

APOD Operations -- Key Organizations and Activities

- Arriving unit interfaces with and is supported by:
 - USAF Aerial Port Squadrons (APS) or Contingency Response Element (CRE)
 - Arrival/Departure Airfield Control Group (A/DACG)
 - Movement Control (Movement Control Agency, Port Movement Control Team)
 - Designated support organizations from receiving command and host nation support

51

APOD Operations -- Airfield Functions and Responsibilities



52

APOD Operations -- Offload Ramp Area

- **CRE** operations and responsibilities
 - CRE operates the airfield
 - CRE is responsible for ramp operations and aircraft parking
 - Supervises off-load operations
 - Provide offload equipment (e.g. MHE) as required
 - Releases aircraft loads to A/DACG control

53

APOD Operations -- Offload Ramp Area (Cont)

- **A/DACG** operations and responsibilities
 - Maintains coordination with CRE & arriving unit
 - Provides offload teams & support equipment (as required)
 - Accepts aircraft loads from CRE at agreed location
 - Coordinates with CRE for return of unit's shoring and dunnage

54

APOD Operations -- Offload Ramp Area (Cont)

- **Arriving Unit** responsibilities
 - Assist, as required, in unlash and offloading equipment from aircraft
 - Retain shoring and dunnage for redeployment
 - Provide A/DACG copy of pax and cargo manifest

55

APOD Operations -- Holding Area

- **A/DACG** operations and responsibilities
 - A/DACG controls holding area
 - Coordinates with CRE & arriving unit
 - Releases aircraft load to arriving unit
 - Coordinates move of unit pallets to unit marshaling areas
 - May provide minor services (fuel, maintenance) for arriving unit vehicles

56

APOD Operations -- Holding Area (Cont)

- **Arriving Unit** activities
 - Provides a liaison to A/DACG to facilitate processing of arriving unit plane loads
 - Assists A/DACG as required
 - Drives unit vehicles from holding area to unit marshaling area
 - Coordinates with movement control teams that may be operating in port area

57

APOD Operations -- Unit Marshaling Area

- **Arriving Unit** activities
 - Install equipment that was removed for strategic deployment
 - Perform maintenance checks and refueling
 - Prepare and organize for movement (convoy, rail, airlift, inland water)

58

APOD Operations -- Unit Marshaling Area (Cont)

- **Area Support Group** (ASG) or other designated organization
 - May provide life support / services for deploying unit
- **Movement Control Teams** (MCTs)
 - Port & Area MCTs operate in APOD ops area
 - Assist units in onward movement
 - Coordinate & task for transportation assets required by deploying unit

59

APOD Operations -- UMO Considerations & Duties

- Develop unit plan for departing marshaling area based on higher hq's, ASCC & theater RSO&I plan
 - Unit may move equipment to railhead for onward movement to destination.
 - Vehicles may convoy and soldiers move by bus
- UMO coordinates move with MCT or other supporting movement organization
- UMO coordinates with ASG or other support units operating railheads, bus transport, etc.

60

APOD Operations -- UMO
Considerations/Duties (Cont)

- **Bottom line:** UMO performs tasks & coordination to move unit out of port area. May include:
 - Preparing for convoy move (convoy requests)
 - Organizing unit for rail (load teams, vehicle reconfiguration) bus, or other modes
- Key consideration: Split UMO operations
 - UMO arrives early to coordinate theater movements, alternate UMO supports APOE departure and arrives later in flow

C-6. A/DACG Assignments

<u>Installation</u>	<u>APOE Peacetime</u>	<u>APOE Mobilization</u>	<u>Installation</u>	<u>APOE Peacetime</u>	<u>APOE Mobilization</u>
Fort Benning	Lawson AAF	Lawson AAF	Fort McCoy	Volk Field	Volk Field
Fort Bliss	Biggs AAF	Biggs AAF		Mitchell Field	Mitchell Field
Fort Belvoir	Andrews AFB	Andrews AFB	Fort McPherson	Dobbins AFB	Dobbins AFB
Fort Bragg	Pope AFB	Pope AFB		Hartsfield-Jackson	Hartsfield-Jackson
Fort Buchanan	Roosevelt	Roosevelt		Intl	Intl
	Rds NAS	Rds NAS	Fort Meade	Dover AFB	Dover AFB
Fort Campbell	Campbell AAF	Campbell AAF	Fort Polk	Alexandria Intl	Alexandria Intl
Fort Carson	Peterson AFB	Peterson AFB	Fort Riley	Forbes Field	Forbes Field
Fort Dix	McGuire AFB	McGuire AFB	Fort Rucker	Eglin AFB/ Hurlburt Field	Eglin AFB/ Hurlburt Field
Fort Drum	Wheeler-Sack AAF	Wheeler-Sack AAF	Fort Sam Houston	Lackland AFB	Lackland AFB
Fort Eustis	Langley AFB	Langley AFB	Fort Sill	Altus AFB	Altus AFB
Fort Hood	Robert Gray AAF	Robert Gray AAF		Lawton/Ft Sill	Lawton/Ft Sill
Fort Huachuca	Davis-Montham AFB	Davis-Montham AFB		Regional	Regional
	Libby AAF	Libby AAF	Fort Stewart	Hunter AAF	Hunter AAF
Fort Irwin	Southern California Intl	Southern California Intl		Robins AFB	Robins AFB
Fort Jackson	Charleston AFB	Charleston AFB	Gowen Field	Gowen Field	Gowen Field
Fort Knox	Standiford Field	Standiford Field		Mountain	Mountain
	Wright-Patterson AFB	Wright-Patterson AFB	Camp Roberts	Home AFB	Home AFB
Fort Leonard Wood	Scott AFB	Scott AFB	Camp Shelby	Travis AFB	Travis AFB
	Lambert Field	Lambert Field		Gulfport-Biloxi	Gulfport-Biloxi
Fort Lewis	McChord AFB	McChord AFB		Intl	Intl
	Travis AFB				

NOTE: It is possible that airfields other than those listed could be designated as onload points for Army units. In this event, A/DACG responsibilities will be tasked according to AR 5-9 and commensurate with the work load already placed on the AR 5-9 installation.

PREPARATION FOR AIRLIFT MOVEMENT



UMODD04

TBOLC 500-500-15

1

Objective



- Know the pertinent procedures/requirements and be able to successfully deploy your unit by air

2

References

DOD 4500.0-R, DTR, Part III, *Mobility*

FM 55-9, *Unit Air Movement Planning*

FM 3-35.4, *Deployment Fort-to-Port*

FORSCOM/ARNG Reg 55-1, *Unit Movement Planning*

3

Outline

- Unit Preparation for Air Movement
- Preparing Personnel for Air Movement
- Equipment Preparation and Joint Inspection
- Center of Balance



4

Unit Preparation for Air Movement



5

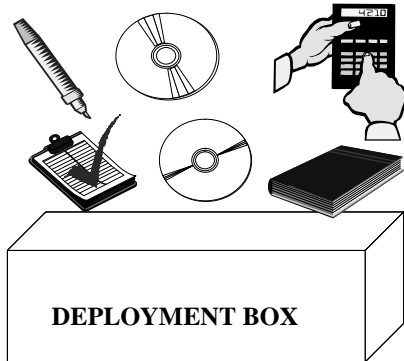
UMO - General Responsibilities

- **UMO:**
 - Coordinates unit airlift planning and preparation activities
 - + Includes coordination with higher headquarters & UMC for unit support & procedures during movement to and processing at APOE.
 - + Primary objective is to minimize the time a unit being moved is non-operational

6

Deployment Box

Manuals / CD's
Measuring tape
Duct tape
Grease pencils
Calculators
Chalk
Pallet Cards
Pallet Bags
DD 2131 / 2133
TB 55-46-1



7

UMO/Unit Preparation Tasks

- Identify the **number of personnel and type and quantity of cargo and equipment** to be moved by air
- Prepare/review air movement plan with higher HQ. Plan should detail unit actions and include sequence of movement for troops & equipment
- Establishing **unit priorities/sequence** for arriving at APOD or area of operations
- Establish **liaison** with supporting agencies
- Identify the cargo or equipment that requires **special handling** based on shipping configuration or fragile/hazardous characteristics
- Request technical assistance to prepare equipment and train personnel available from higher HQ, installation UMC, A/DACG & CRE [Air Force] (if required)

8

Ref: FM 3-35.4, p.L-1

UMO/Unit Preparation Tasks (cont)

- Plan and coordinate required **administrative support, unit movement training, air movement planning, logistics and maintenance support, and prepare briefs** for deploying personnel on standard safety practices in and around aircraft
- Assign unit movement or **embarkation officer**
- Plan movement** to POE (convoy, rail, water, commercial truck)
- Establish trained **load teams** to assist the A/DACG
- Identify foreign border clearance requirements (if applicable)
- Enter force deployment requirements into TC-ACCIS/TC-AIMS II (**DEL/UDL**) to accurately reflect lift requirements and deployment priorities
- Determine requirements for vehicle cargo **restraint devices**

9

Ref: FM 3-35.4, p.L-1

UMO/Unit Preparation Tasks (cont)

- Review inspection procedures and documentation requirements for **hazardous cargo**
- Preparing & organizing soldiers for **air movement** (Includes designating key personnel, determining procedures for transportation of individual weapons and equipment procedures, aircraft safety & manifesting)
- Obtain **BBPCT** and determine aircraft shoring requirements, ensuring its availability before loading and establish destination disposition procedures
- Determining **463L pallets requirements** (including net sets, plastic pallet covers and dunnage)

10

Ref: FM 3-35.4, p.L-1

UMO/Unit Preparation Tasks (cont)

- Prepare **movement documentation** (vehicle load plans, DEL) - consider secondary cargo and hazardous or sensitive cargo/equipment
- Preparing equipment & cargo to include 463L pallet & vehicle loads (Includes configuring equipment for air movement and weighing vehicles and marking center of balance) IAW DOD 4500.9 (Defense Transportation Regulations)
- Identify **support requirements** (MHE, scales, prime movers etc to the DACG)

Ref: FM 3-35.4, p.L-1

11

DACG Preparation Tasks

- Determine the number of personnel and type and quantity of cargo to be moved
- Determine the **timeframe** for loading
- Confirm the **location** or airfield(s) and marshaling area(s) with the installation or base commander and the deploying unit
- Determine available APOE logistic and administrative **facilities**
- Determine user support facilities (MHE, security, lighting, fuels, etc)
- Establish **liaison** with the deploying unit and other support activities

Ref: FM 3-35.4, p.L-2

12

DACG Preparation Tasks

- Coordinate with the CRE to establish DACG training requirements
- Coordinate foreign border clearance requirements and procedures (if necessary)
- Obtain DEL/UDL of unit cargo and equipment to be loaded. Identify any problems that will affect loading or require special attention to the CRE
- Validate shoring requirements
- Ensure 463L pallet dunnage availability

Ref: FM 3-35.4, p.L-2

13

Preparing Personnel for Air Movement



14

Soldier Readiness Program

- **Personal readiness**
 - Legal (will, power of attorney)
 - Financial (pay, credit cards, rent, car payments)
 - Medical / dental
 - ID card and tags / etc.
- Individual weapons and equipment



15

Preparing Personnel for Air Movement

- Identify key unit personnel and assign duties & responsibilities
- Key positions include:
 - Unit liaison to A/DACG:
 - ♦ Facilitates communication between unit and A/DACG
 - ♦ Clarifies processing procedures and resolves problems
 - Planeload or troop commander:
 - Assumes control of all passengers listed for movement on the flight
 - Ensures passengers are briefed on aircraft procedures
 - Ensures necessary support is provided during enroute stops

16

Preparing Personnel for Air Movement (cont)

- **Training:**
 - Unit vehicle drivers & equipment operators may require training in aircraft loading & off-loading and proper procedures for restraining unit cargo (under aircraft load master supervision)
 - Personnel preparing hazardous cargo for air movement require training & certification



17

Preparing Personnel for Air Movement (cont)

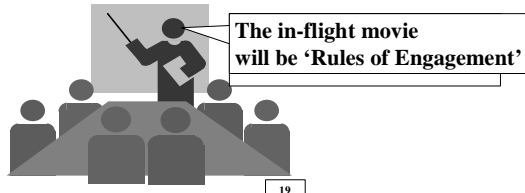
- **Individual Weapons:**
 - Develop and brief individual weapons & ammunition procedures for airlift ops
 - Reference TM 38-250 for instructions on packing & certification of ammunition
 - Weapons should be "cleared" before boarding aircraft
 - Personnel requiring loaded weapons must be identified to aircraft commander



18

Preparing Personnel for Air Movement (cont)

- **Brief Personnel:**
 - Briefing should provide a basic understanding of in-flight responsibilities and procedures for disembarking aircraft.
 - Briefing should include identification of key personnel (troop commander, load master)



19

EQUIPMENT PREPARATION AND JOINT INSPECTION



20

Overview of Equipment Preparation

- Responsibilities
- Inspection Procedures
- DD Form 2133



21

Preparing Equipment and Cargo for Air Movement

- References for equipment preparation include:
 - FORSCOM/ARNG 55-1, *Unit Movement Planning*
 - FM 55-9, *Unit Air Movement Planning*, Appendix B
 - DD Form 2133, Joint Airlift Inspection Record



22

Joint Inspection Process

- Ensures that personnel, vehicles, supplies and equipment are airlifted safely
- **Two steps**
 - Prepare vehicles, supplies and equipment for the Joint Inspection
 - The actual inspection



Ref: FM 3-35.4, p.K-1/2

23

Responsibilities

- All equipment must be properly prepared and documented before it can be loaded on any aircraft



24

Responsibilities

- **CRE or MST**
 - Responsible for approving all aircraft loads
 - Supervising the loading/off loading and tie down of vehicles and cargo
 - Assuring compliance with applicable aircraft loading manuals
- **Transported Unit**
 - Responsible for setting up the movement precedence, cargo preparation and troop management
 - Preparing the documentation and on and off loading and restraining all cargo aboard AMC aircraft

25

Responsibilities

- **Joint**
 - Accomplish and document final joint inspections
 - Qualified representatives from the moving unit, DACG/MCC, and the supporting airlift representative will perform the inspection
 - The aircraft loadmaster or boom operator can conduct the final inspection



26

Joint Inspection Procedures

- Qualified Air Force and transported unit representatives will conduct final inspections
- The completed form will indicate inspections are complete
- No "Before Loading Inspection" is required by the aircrew; if all noted discrepancies are corrected before loading
- HAZMAT certifier for transported unit must be present during the inspection

27

Joint Inspection Form

- **DD Form 2133** is used as the **final joint inspection** document (example form at FM 3-35.4, p.K-3)
- **Three copies** are completed for each aircraft load and signed by representatives of the transported force and the supporting airlift personnel

- 1) Attach the original signed copy to the aircraft cargo manifest
- 2) CRE or MST/DACG/MCC will keep one copy for station
- 3) Transported force will keep one copy

28

General Guidelines

- **Vehicles and equipment** should be prepared so as not to diminish their combat capability. They should not be reduced greater than that required to meet the dimensional and weight restrictions of the aircraft transporting them.
- **General cargo** can be carried in or on any vehicle if the cargo can be properly secured and restrained.
- Supplies and equipment not transported as secondary loads should be palletized.
- **Internal airlift/helicopter slingable units (ISU)** are certified for air transportation. The keys to the containers must be available throughout the deployment process. Hazardous materials must be accessible at all times when containerized.
- **463L pallets** are certified for airlift to a maximum of 10,000 pounds weight. There are various height restrictions, according to the pallet's position within the aircraft.

29

Ref: FM 3-35.4, p.K-1/2

DD Form 2133 (Joint Airlift Inspection Record)



☆ Use as a guide when preparing equipment and cargo for airlift
Ref: FM 3-35.4, p.K-3

30

DD Form 2133 - Heading

- Page ____ of ____ Pages
- 1. Unit Being Airlifted (numerical designation and geographic location of the deploying unit)
- 2. Departure Airfield
- 3. Date (YYYYMMDD) of inspection
- 4. Aircraft Type and Mission Number
- 5. Load/ Chalk Number
- 6. Start Time: of inspection (local)
- 7. Complete Time: of inspection (local) - load ready for movement
- 8. CRE / CDF (Cargo Deployment Function) numerical designator

JOINT AIRLIFT INSPECTION RECORD				1005		PAGE OF PAGES	
1. UNIT BEING AIRLIFTED 7th Trans Gp, Ft Eustis, VA		2. DEPARTURE AIRFIELD Langley AFB, VA		3. DATE (YYYYMMDD) 20030115			
4. AIRCRAFT TYPE AND MISSION NUMBER C17 015/03		5. LOAD/CHALK NO. 05/07		6. START TIME 1005		7. COMPLETE TIME 1430	
						8. TALCE/CDI 15 AMCS	

Ref: FM 3-35.4, p.K-3

DD Form 2133 - Legend

✓ = Satisfactory

X = Unsatisfactory

If Not Applicable, Leave Blank

DD Form 2133 - Increment/Serial/Bumper Type

- Each item has its own column
- TCN's (Transportation Control Numbers) will be used to identify each individual item

LEGEND (Mark blocks after each item as follows) ✓ = SATISFACTORY X = UNSATISFACTORY IF NOT APPLICABLE, LEAVE BLANK	INCREMENT/SERIAL/BUMPER NUMBER AND TYPE									

DD Form 2133 - Section A: Documentation

- Item 9.**
 - Manifests (DD FORM 2131)
 - Loadplans (DD FORM 2130 series)
 - 7 for CONUS / 15 for OCONUS moves
 - Check for proper manifesting of the entire chalk, and check that the load plane scale weights match the manifest weights
 - Zero defects – 100% accountability
 - Ensure the load is correctly sequenced (IAW manifest) and complies with all aircraft loading and safety of flights limitations
 - ID card for accountability

DD Form 2133 - Section A: Documentation (Cont)**Item 10.** Shipper's Declaration for Dangerous Goods

Check for proper preparation of all required hazardous material documentation and certification

DD Form 2133 - Section A: Documentation (Cont)

- Item 11.** Hazardous Materials Preparation - check that all hazardous cargo in vehicles or as secondary loads is properly prepared, position and compatible with other hazardous material in the chalk as determined in TM 38-250
- Item 12.** Load Lists / Cargo Transfer Forms: a list of items shipped must be included - ensure proper preparation of all required load lists and/or custodial transfer documentation

Ref: FM 3-35.4, p.K-4

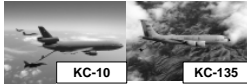
Ref: FM 3-35.4, p.K-4



Fuel Tank Levels (cont)



Vehicles and self propelled units: 3/4 full on cargo floor 1/2 full on ramp



Vehicles and self propelled units: 1/2 full anywhere on aircraft

43

Fuel Levels (cont)

- Single axle units disconnected from its prime mover and loaded with its tongue resting on the aircraft floor or ramp must be drained, but need not be purged (up to 500 ml [17 ounces] of fuel may be left in engine components and fuel lines)



44

DD Form 2133 - Section B: Vehicles / Non-Powered Equipment (cont)

Item 17b - Fuel Tank(s) Caps Installed



Ref: FM 3-35.4, p.K-4

45

DD Form 2133 - Section B: Vehicles / Non-Powered Equipment (cont)

Item 18: Jerrycans

18A: DOT 5L (Metal)

- Authorized for transporting flammable liquid fuel stocks
- Combined with fuel shipped in vehicle tanks do not exceed two full tanks supply
- Must be secured in approved storage racks designed to prevent movement or leakage during airlift
- Must be serviceable - ie serviceable gasket in place on the screw gap closure, no leakage or dents in seams
- Can only be palletized when drained (purging not required)
- No minimum fuel requirement - 5 gallons maximum (measured to the weld bead near the top of the can)



Ref: FM 3-35.4, p.K-4

46

DD Form 2133 - Section B: Vehicles / Non-Powered Equipment (cont)

Item 18: Jerrycans

18B: POP (Performance Oriented Packaging) - plastic

- Same as for DOT 5L (Metal) except these containers may be palletized with hazardous material inside and a 2% ullage must be maintained to prevent expansion and leakage when filling this container

POP
Plastic



DOT 5L
Metal

47

DD Form 2133 - Section B: Vehicles / Non-Powered Equipment - Tankers

- No tanker type vehicle is certified to be air-lifted full, with the exception of the M-149A2 water buffalo (only when potable water not readily available at destination)

- Diesel tankers will be drained

- Mogas tankers will be drained and purged

Ref: FM 3-35.4, p.K-1



48

DD Form 2133 - Section B: Vehicles / Non-Powered Equipment
(cont)

▪ **Item 19** - Dimensions

- Ensure equipment will negotiate the aircraft ramps and interior dimensions (will not come into contact with the aircraft sidewalls or ceiling at any time)



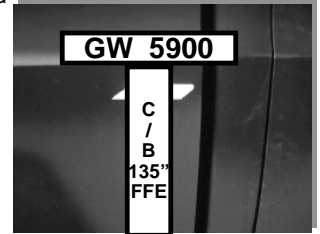
Ref: FM 3-35.4, p.K-5

49

DD Form 2133 - Section B: Vehicles / Non-Powered Equipment
(cont)

- **Item 20** - Center of Balance - to nearest whole inch (Marked on both sides of vehicle)

- **Item 21** - Scale/Gross Weight - to nearest whole pound (Marked on both sides of vehicle)



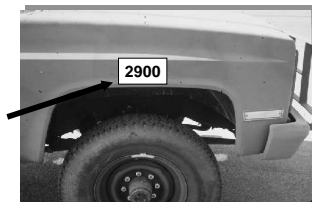
Ref: FM 3-35.4, p.K-5

50

DD Form 2133 - Section B: Vehicles / Non-Powered Equipment
(cont)

- **Item 22** - Axle Weights (Marked on both sides of vehicle)

- Mark axle weights above each axle



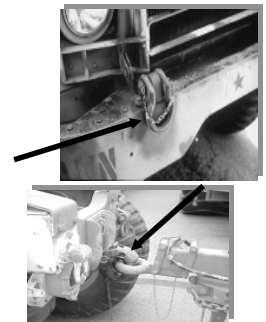
Ref: FM 3-35.4, p.K-5

51

DD Form 2133 - Section B: Vehicles / Non-Powered Equipment
(cont)

- **Item 23** - Tiedown Points (Serviceable)

- Ensure all clevises and tie down points are serviceable
- Include interior and exterior cargo restraint tiedowns in the inspection



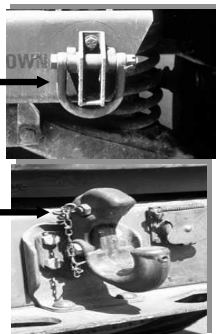
Ref: FM 3-35.4, p.K-5

52

DD Form 2133 - Section B: Vehicles / Non-Powered Equipment
(cont)

- **Item 24** - Pintle Hooks/Clevises

- **Item 24a** - Serviceable (ensure all devices required for loading/off-loading trailers and cargo are serviceable)
- **Item 24b** - Safety Pin Attached (Ensure all required pins or cotter keys are properly attached and serviceable)



Ref: FM 3-35.4, p.K-5

53

DD Form 2133 - Section B: Vehicles / Non-Powered Equipment
(cont)

- **Item 25** - Vehicle Equipment Secured: Ensure all vehicle accessories are secure, including fire extinguishers, seat brackets, and any other loose equipment that may become a projectile during flight



Ref: FM 3-35.4, p.K-5

54

DD Form 2133 - Section B: Vehicles / Non-Powered Equipment
(cont)

- **Item 26** - Tire Pressure - ensure within manufacturer specifications (Max 100 psi). Tires must be sufficiently inflated to prevent wheel-rim contact with the aircraft floor. Note that tires are not to be deflated to aid in clearance for loading on board aircraft



Ref: FM 3-35.4, p.K-5

55

DD Form 2133 - Section B: Vehicles / Non-Powered Equipment
(cont)

- **Item 27** - Shoring (Rolling, Parking, Sleeper, Special, Approach)
 - Check that all required shoring is serviceable and immediately available for use
 - Ensure shoring is adequate for the intended task (consult aircraft loading manual)



Ref: FM 3-35.4, p.K-5

56

DD Form 2133 - Section B: Vehicles / Non-Powered Equipment
(cont)

- **Item 28** - Accompanying Load
 - **Item 28a** - Within Vehicle
 - Rated Capacity (do not exceed cross-country capacity) - see vehicle data plate



Ref: FM 3-35.4, p.K-5

57

DD Form 2133 - Section B: Vehicles / Non-Powered Equipment
(cont)

- **Item 28b** - Secure To Vehicle
 - Ensure cargo is properly restrained and within the loading criteria for the vehicle (generally not to exceed sidewall height)
 - Use a minimum of 1/2 inch diameter rope (not nylon - it stretches) for cargo restraint. 463L aircraft tiedown equipment may also be used
 - Ensure rope touches cargo not just side racks
 - Consider all locally manufactured modifications as secondary loads



Ref: FM 3-35.4, p.K-5

58

DD Form 2133 - Section B: Vehicles / Non-Powered Equipment
(cont)

- **Item 29** - LOX/Nitrogen Cart
 - Ensure appropriate vent kit materials are with the cart
 - Ensure a technician is available at loading to install vent



Ref: FM 3-35.4, p.K-5

59

DD Form 2133 - Section C: Pallets/Pallets Trains



60

DD Form 2133 - Section C: Pallets/Pallets Trains

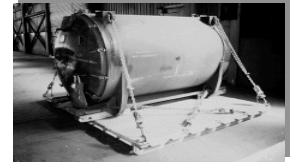
- **Item 30** – Clean: clean each pallet and piece or equipment of all grime, oil, dirt etc - steam clean if necessary. Ensure no soil is transported on or under items loaded on the pallet
- **Item 31** – Pallet Scale Weight (to the nearest pound): attached to one 88-inch side and one 108-inch side of the pallet
- **Item 32** – Dimensions: Check that each pallet does not exceed the dimensions of the planned aircraft position (vary among aircraft and among pallet positions on a specified aircraft) - eg Pallet Position 6 on a C-130 may not exceed 76 inches in height

Ref: FM 3-35.4, p.K-5

61

DD Form 2133 - Section C: Pallets/Pallets Trains (cont)

- **Item 33** - Cargo Properly Secured
 - **Item 33a** - Netted (nets serviceable and properly installed)
 - **Item 33b** - Chained/Strapped (serviceable and properly installed and provide adequate restraint)

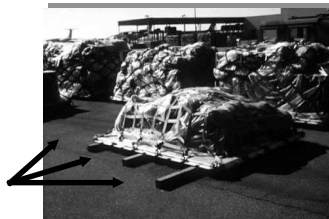


Ref: FM 3-35.4, p.K-6

62

DD Form 2133 - Section C: Pallets/Pallets Trains (cont)

- **Item 34** - Dunnage (3 Pieces Per Pallet)
 - Ensure three x 4" x 4" x 88" pieces accompany each pallet during shipment



Ref: FM 3-35.4, p.K-6

63

DD Form 2133 - Section D: Helicopters (Flyaway)



64

DD Form 2133 - Section D: Helicopters (Flyaway) (cont)

- **Item 35** – Fuel Quantity (Gallons)
 - Do not exceed $\frac{3}{4}$ full or 150 gallons per tank whichever is less

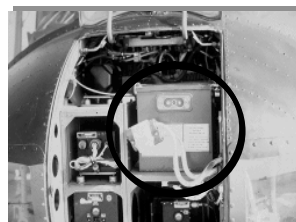


Ref: FM 3-35.4, p.K-6

65

DD Form 2133 - Section D: Helicopters (Flyaway) (cont)

- **Item 36** – Battery: Ensure user disconnects and tapes battery terminal and secures the battery to prevent accidental leaks and short circuits



Ref: FM 3-35.4, p.K-6

66

DD Form 2133 - Section D: Helicopters (Flyaway) (cont)

▪ **Item 37** – CB

- Ensure user clearly marks the CB on both sides of the item



Ref: FM 3-35.4, p.K-6

67

DD Form 2133 - Section D: Helicopters (Flyaway) (cont)

▪ **Item 39** - Shoring (*Rolling, Parking, Approach*)

- Check that all required shoring is serviceable and immediately available for use
- Ensure adequate shoring is available to decrease the ramp angle to keep the helicopter from striking the ground or the aircraft



Ref: FM 3-35.4, p.K-6

68

DD Form 2133 - Section D: Helicopters (Flyaway) (cont)

▪ **Item 40** - Special Loading Equipment

- Be sure special equipment necessary to load this cargo is available (tools, jacks, pintle hooks, ramps, towbars etc)

▪ **Item 41** - Remarks

- List and explain, in detail, any discrepancies found during the inspection and actions taken to correct the problem

Ref: FM 3-35.4, p.K-6

69

DD Form 2133 - Section D: Helicopters (Flyaway) (cont)

▪ **Item 42** - Deploying Force Representative

- Signed by the deploying unit representative accompanying the mobility force inspector

▪ **Item 43** - Mobility Force Representative

- Signed by the CRE representative conducting the inspection

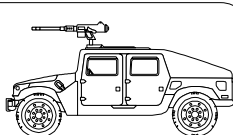
THE ABOVE LISTED ITEMS HAVE BEEN INSPECTED FOR PROPER SHIPPING CONFIGURATION.	
42. DEPLOYING FORCE REPRESENTATIVE (Signature/Rank/Unit of Assignment)	43. MOBILITY FORCE INSPECTOR (Signature/Rank/Unit of Assignment)
DD FORM 2133, OCT 1998 (EG) PREVIOUS EDITION IS OBSOLETE.	
Reset	

Ref: FM 3-35.4, p.K-6

70

DETERMINE CENTER OF BALANCE

D1 = 20
D2 = 150
W1 = 2,870
W2 = 2,550



71

CARGO WEIGHING

- All cargo offered for shipment must be weighed
 - Portable or fixed scales
 - Indicate actual weight on both sides of items offered for shipment
 - Scale weight must be recorded on all copies of the manifest
- Accuracy of weights
 - Don't weigh cargo until secondary load is secured
 - Don't add or remove cargo
 - Any additions/deletions require cargo to be weighed again



72

TYPES OF SCALES

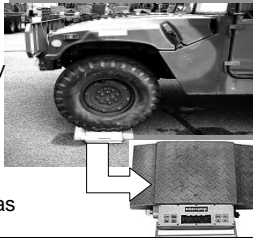
Fixed Scales

- Permanently installed weighing devices
- These scales are capable of weighing most items of cargo
- Located at most major military installations



Portable scales

- Most commonly used have a capacity of 20,000 lbs per scale
- Normally used in multiples of four (minimum is two)
- Used extensively at airfields, marshaling areas and inspection areas



73

USING PORTABLE SCALES - VEHICLES

- When only two portable scales are available:
 - Place the scales in front of the tires of the first axle
 - Drive the vehicle onto the scales; keep tires centered on the scales
 - Determine the axle weight - note each scale weight (right and left side) must be combined to obtain the axle weight
 - Continue process until all axles are weighed
- The driver and/or passengers must be out of the vehicle prior to weighing



74

USING PORTABLE SCALES - PALLETS

- Weighing pallets
 - Each 463L pallet must be weighed
 - Scale weights must be recorded on all copies of the manifest
 - Place a loaded pallet evenly on two portable scales (three pieces of dunnage must be weighed with the pallet)
 - Add the two scale weights together to get the pallet gross weight
 - Ensure the scale weight is clearly marked on one 88-inch side and one 108-inch side of the pallet



75

Wheeled Vehicle Measurement



76

Center of Balance Terminology

- **CB** - CENTER OF BALANCE - the point of balance of a piece of cargo
- **FAW** = FRONT/FORWARD AXLE WEIGHT (pounds)
- **IAW** = INTERMEDIATE AXLE WEIGHT (pounds)
- **RAW** = REAR AXLE WEIGHT (pounds)
- **GW** = GROSS WEIGHT (pounds) (the total weight of an item of cargo, including all secondary loads - found by adding all individual axle weights together)
- **RDL** = REFERENCE DATUM LINE (point from which all measurements are taken - normally the forward edge of a vehicle).
- **MOMENT** Product (inch-pounds) obtained by multiplying the weight (axle) by a distance (inches) from the RDL.

77

Center of Balance Terminology (cont)

- **FOH** = FRONT OVERHANG (Distance in inches from front edge [bumper] to center of front axle)
- **WB** = WHEEL BASE (Distance in inches from center of front axle to center of rear axle or center of tandem axles)
- **FFE** = FROM FORWARD EDGE (Distance in inches from the most forward edge of a vehicle to its CB)

78

Center of Balance Criteria

- Center of balance markings are not required on individual 463L pallets (if built correctly CB will be at or near the center - however, CB marking required for married pallets [pallet train])
- Mark the CB on all items of cargo that meet the following criteria
 - All vehicles
 - Any items of cargo 10 feet or longer
 - Any item with a CB point other than its center



79

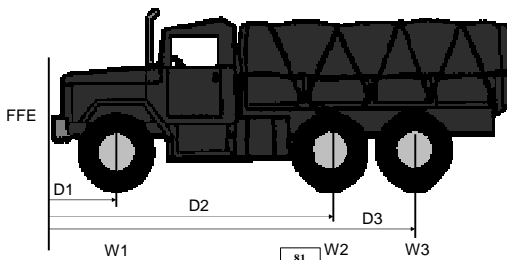
CENTER OF BALANCE OF WHEELED VEHICLES



80

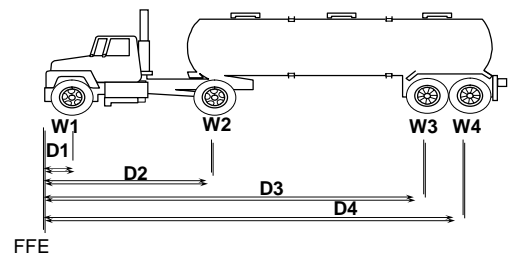
Wheeled Vehicles CB

- Determine distance from front forward edge (FFE) to the middle of the front, intermediate & rear axles



81

Wheeled Vehicles CB (cont)



82

Wheeled Vehicles CB (cont)

- Only vehicles that require a combined CB are those tractor-trailers that will remain coupled during flight



Ref: FM 3-35.4, p.K-5

83

Wheeled Vehicles CB (cont)

W1= Front axle weight in pounds

W2 = Intermediate axle weight

W3= Rear axle weight

D1= Distance in inches, from FFE to Front axle

D2= Distance from FFE to Intermediate axle

D3= Distance from FFE to Rear axle

Gross Weight = Sum of W1, W2, W3 etc (sum of all axle weights)

$$CB = \frac{(W1 \times D1) + (W2 \times D2) + (W3 \times D3)}{\text{GROSS WEIGHT}}$$

(rounded to the nearest inch)

84

Wheeled Vehicles CB (cont)

W1 = 5,000 lbs

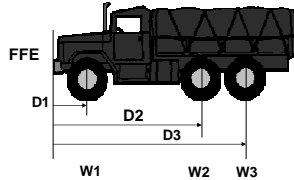
W2 = 5,000 lbs

W3 = 5,000 lbs

D1 = 35 inches

D2 = 131 inches

D3 = 177 inches



85

Wheeled Vehicles CB (cont)

$$CB = \frac{(W1 \times D1) + (W2 \times D2) + (W3 \times D3)}{GW}$$

$$CB = \frac{(5,000 \times 35) + (5,000 \times 131) + (5,000 \times 177)}{15,000}$$

$$CB = \frac{175,000 + 655,000 + 885,000}{15,000} = \frac{1,715,000}{15,000}$$

$$CB = 114.33 \text{ or } 114 \text{ inches (rounded to nearest inch)}$$

86

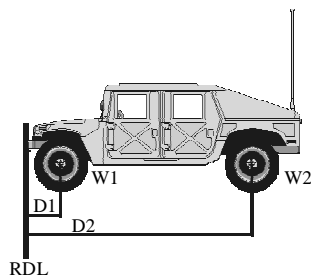
Sample Problem 1

D1 = 20

D2 = 150

W1 = 2,870

W2 = 2,550



87

Sample Problem 2

D1 = 70

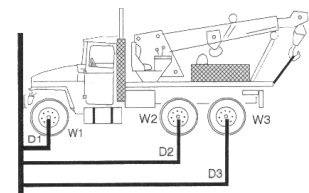
D2 = 222

D3 = 276

W1 = 12,500

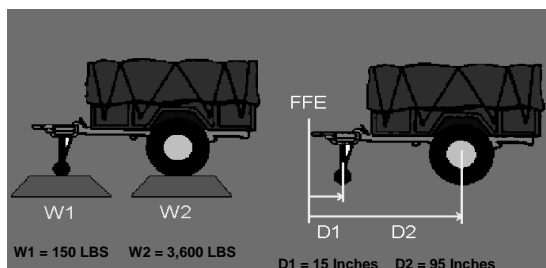
W2 = 12,900

W3 = 12,700



88

Trailer CB



W1 = 150 LBS W2 = 3,600 LBS

D1 = 15 Inches D2 = 95 Inches

89

Trailer CB (cont)

$$CB = \frac{(W1 \times D1) + (W2 \times D2)}{GW}$$

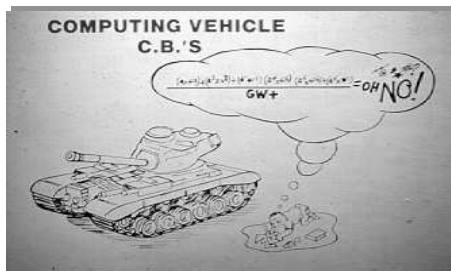
$$CB = \frac{(150 \times 15) + (3,600 \times 95)}{3,750}$$

$$CB = \frac{2250 + 342,000}{3,750}$$

$$CB = 91.8 \text{ or } 92 \text{ Inches}$$

90

Tracked Vehicles CB

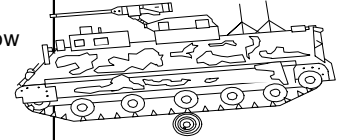


How do you determine the individual axle weights?

91

Tracked Vehicles CB (cont)

- To determine the center of balance for a tracked vehicle, drive the vehicle over an object large enough to allow the vehicle to teeter
- The location of where the vehicle teeters will be marked as the center of balance



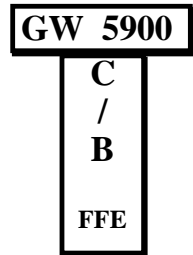
92



93

Center of Balance Marking

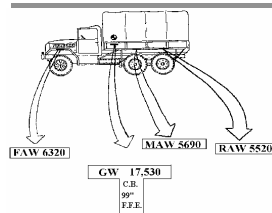
- After computing the CB of the vehicle:
- Mark its location and gross weight on both sides of the vehicle
- Using weather resistant masking tape and grease pencil/magic marker, forming the letter "T"



94

Center of Balance Marking (cont)

- "T" marking
 - The horizontal portion of the "T" will contain the gross weight
 - The vertical portion indicates the exact position of CB (indicated by the letter 'CB')
 - Indicate number of inches from the RDL to the CB location and mark axle weights above each axle on both sides of the vehicle



95

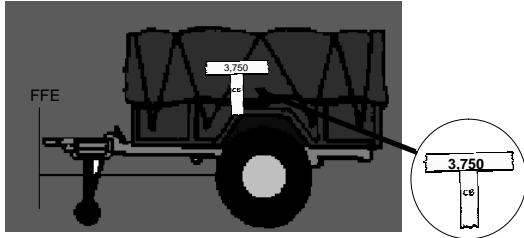
Center of Balance Marking (cont)



- Equipment that has a cargo carrying capability will
 - Be marked as an empty CB
 - Marked as a loaded CB
- Trucks and towed equipment transported coupled will have an individual CB on each item (allows them to be disconnected and shipped on separate aircraft)
- Items not weighed or marked correctly will not be accepted for shipment

96

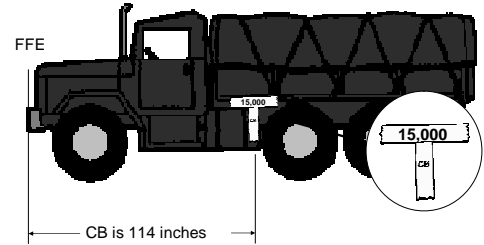
Center of Balance Marker - Trailer



CB is 92 inches from FFE

97

Center of Balance Marker - Truck

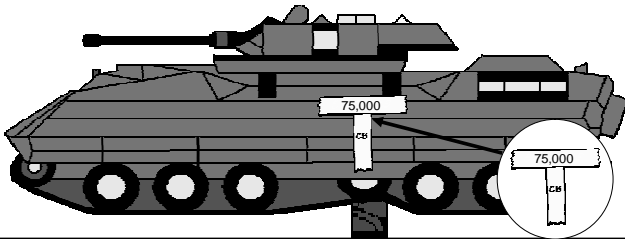


CB is 114 inches

98

Center of Balance Marker - Tracked Vehicles

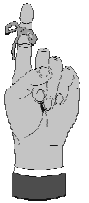
- Mark CB at balance point



99

Summary

- Initial Planning
- Personnel
- Equipment Preparation and Joint Inspection
- Center of Balance



100

JOINT AIRLIFT INSPECTION RECORD (See Instructions on back.)													PAGE	OF	PAGES
1. UNIT BEING AIRLIFTED				2. DEPARTURE AIRFIELD				3. DATE (YYYYMMDD)							
4. AIRCRAFT TYPE AND MISSION NUMBER				5. LOAD/CHALK NO.		6. START TIME		7. COMPLETE TIME		8. TALCE/CDF					
LEGEND (Mark blocks after each item as follows) ✓ = SATISFACTORY X = UNSATISFACTORY IF NOT APPLICABLE, LEAVE BLANK				INCREMENT/SERIAL/BUMPER NUMBER AND TYPE											
A. DOCUMENTATION															
9. MANIFESTS/LOAD PLANS															
10. SHIPPERS DECLARATION															
11. HAZARDOUS MATERIALS PREPARATION															
12. LOAD LISTS/CARGO TRANSFER FORMS															
B. VEHICLES/NON-POWERED EQUIPMENT															
13. CLEAN															
14. FLUID LEAKS															
15. MECHANICAL CONDITION															
a. ENGINE RUNS															
b. BRAKES OPERATIONAL															
16. BATTERY															
a. SECURE - NO LEAKS															
b. POST/CABLES-PROTECTED															
17. FUEL TANK(S) LEVELS															
a. AS REQUIRED															
b. FUEL TANK CAPS INSTALLED															
18. JERRY CANS															
a. DOT 5L (Metal)															
b. POP (Plastic)															
19. DIMENSIONS (Fits A/C Profile or Contour)															
20. CENTER OF BALANCE (Both Sides)															
21. SCALE WEIGHT (Both Sides)															
22. AXLE WEIGHTS (Both Sides)															
23. TIEDOWN POINTS (Serviceable)															
24. PINTLE HOOKS/CLEVISSES															
a. SERVICEABLE															
b. SAFETY PIN ATTACHED (Safety Chains)															
25. VEHICLE EQUIPMENT SECURE (Tools, tires, etc.)															
26. TIRE PRESSURE															
27. SHORING (Rolling, Parking, Sleeper, Approach)															
28. ACCOMPANYING LOAD															
a. WITHIN VEHICLE RATED CAPACITY															
b. SECURE TO VEHICLE															
29. LOX/NITROGEN CART (Vent Kit)															
C. PALLETS/PALLET TRAINS															
30. CLEAN															
31. SCALE WEIGHT															
32. DIMENSIONS (Fits A/C Profile or Contour)															
33. CARGO PROPERLY SECURED															
a. NETTED															
b. CHAINED/STRAPPED															
34. DUNNAGE (3 Pieces Per Pallet)															
D. HELICOPTERS (Flyaway)															
35. FUEL QUANTITY (Gallons)															
36. BATTERY (Disconnected/Taped)															
37. CENTER OF BALANCE (Both Sides)															
38. SCALE WEIGHT (Both Sides)															
39. SHORING (Rolling, Parking, Approach)															
40. SPECIAL LOADING EQUIPMENT (Towbars, etc.)															
41. REMARKS															
THE ABOVE LISTED ITEMS HAVE BEEN INSPECTED FOR PROPER SHIPPING CONFIGURATION.															
42. DEPLOYING FORCE REPRESENTATIVE (Signature/Rank/Unit of Assignment)							43. MOBILITY FORCE INSPECTOR (Signature/Rank/Unit of Assignment)								

INSTRUCTIONS**1. RESPONSIBILITIES**

- 1.1. Qualified TALCE/CDF or aerial port personnel are responsible for acceptance of cargo for airlift.
- 1.2. The deploying unit is responsible for the preparation of cargo, including weighing, marking, palletization, and the preparation of all documentation.
- 1.3. The joint inspection, including documentation and inspection of all items prepared for air shipment, must be accomplished prior to loading. This inspection will be performed by qualified TALCE/CDF or aerial port personnel with a representative from the transported force.

2. INSPECTION PROCEDURES

- 2.1. All inspections will be conducted by qualified inspectors and transported force representatives. The TALCE/CDF or aerial port representative accepting cargo for air shipment must have completed hazardous materials inspector training required by paragraph 1.17.3, AFJMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030.19F/DLAM 4145.3. The completed form will indicate to the aircraft loadmaster that the required inspection has been accomplished.
- 2.2. This form will be used as the source document for joint inspection. Three copies will be completed for each aircraft load and sign by the appropriate personnel.
 - (1) One signed copy will be attached to the aircraft cargo manifest.
 - (2) One signed copy for the TALCE/CDF or aerial port station file.
 - (3) One signed copy for the transported force.

3. PREPARATION INSTRUCTIONS

- 3.1. Heading.
 - (1) Block 1, Unit Being Airlifted. Enter the numerical designation and geographic location of the military unit responsible for the equipment being airlifted. For example, 1st Tactical Fighter Wing, Langley AFB VA.
 - (2) Block 2, Departure Airfield. Enter the name of the facility the airlifted unit is departing, i.e., Langley AFB VA.
 - (3) Block 3, Date. Day, month and year that the inspection is accomplished.
 - (4) Block 4, Aircraft Type and Mission Number. Enter the aircraft type on which the equipment is to be loaded and the airlift mission number as designated in the plan or operations order.
 - (5) Block 5, Load/Chalk Number. Enter the deploying force assigned aircraft load number that establishes the desired load movement sequence.
 - (6) Block 6, Start Time. Enter the local time that the inspection was started.
 - (7) Block 7, Complete Time. Enter the local time that the load was checked, and is ready for movement.
 - (8) Block 8, TALCE/CDF. Enter the numerical designation of the unit that has TALCE/CDF or aerial port responsibility for the operating location.
- 3.2. Body.
 - (1) Enter the increment/serial/bumper number and type of equipment in the appropriate block. The legend for completing the inspection is contained in the block on the left. Annotate the appropriate entry in the proper column. Make only one entry in each inspection block for each item.
 - (2) Enter items not initially accepted in the remarks section and indicate corrective action.
 - (3) Blocks 42 and 43. Signature must be legible. Indicate the rank and unit of assignment of the individual signing the form.

WHS/DIOR, Oct 98

U.S. Army Transportation School
Deployment and Deployment Systems Department
Strategic Deployment Division

“Preparation of Unit Supplies for Air Movement”

612-602-02 UMODPC

500-500-15 TOBC

Practical Exercise

- ACTION:** Upon completion of this Practical Exercise, you will possess a better understanding of the mathematical procedures used in determining vehicle C/B computations and publications used to aid unit movement by air.
- CONDITION:** Practical Exercise and classroom instruction.
- STANDARD:** To receive a "GO" for this Practical Exercise, you must compute the following center of balance problems and answer the following questions with 100% accuracy (within the one hour timeframe).

1. Determine the C/B for the following M1008 CUCV, 5/4-Ton truck.

FAW (W1)	3400 Pounds	D1 = 37 Inches
RAW (W2)	2800 Pounds	D2 = 169 Inches

CB FFE = ____ Inches.

2. Determine the C/B for the following M35A2, 2-1/2 Ton truck.

W1 = 6000 Pounds	D1 = 38 Inches
W2 = 4900 Pounds	D2 = 168 Inches
W3 = 4900 Pounds	D3 = 216 Inches

CB FFE = ____ Inches.

3. Determine the C/B for the following M936, 5-Ton wrecker truck.

W1 = 12500 Pounds	D1 = 70 Inches
W2 = 12900 Pounds	D2 = 222 Inches
W3 = 12800 Pounds	D3 = 276 Inches

CB FFE = ____ Inches

4. Determine the C/B of the following M978 tanker truck.

W1 = 10700 Pounds	D1 = 76 Inches
W2 = 11700 Pounds	D2 = 136 Inches
W3 = 8600 Pounds	D3 = 286 Inches
W4 = 8000 Pounds	D4 = 346 Inches

CB FFE = _____ Inches.

5. Determine the C/B of the following M911 tractor w/M747 trailer attached as a single item for C/B computation.

FAW = 16000 Pounds	D1 = 60 Inches
IAW = 16950 Pounds	D2 = 265 Inches
IAW = 16950 Pounds	D3 = 325 Inches
IAW = 5000 Pounds	D4 = 585 Inches
IAW = 5000 Pounds	D5 = 633 Inches
IAW = 5000 Pounds	D6 = 681 Inches
RAW = 5000 Pounds	D7 = 729 Inches

CB FFE = _____ inches.

6. Vehicles will normally be transported at a reduced _____.
7. What do the letters FFE mean? _____.
8. Cargo preparation includes weighing, _____, _____, and palletizing.
9. What is the requirement for an item (cargo) to be marked with a C/B marking?
_____ OR _____.
10. What is the maximum fuel level for wheeled engine-powered support equipment connected to a prime mover, when deploying under a "Chapter 3" (hazmat reg.) deployment? _____
11. Vehicles or engine-powered support equipment air transported on a KC-10 aircraft (Chap. 3, hazmat reg.) may have a maximum fuel in tank level of

12. All helicopters may be air transported with 3/4-tank of fuel? YES / NO
13. Is it a requirement to determine all vehicle and trailer axle weights? YES / NO
14. What is the form used to manifest passengers for air transport? _____
15. What is the fuel level authorized for a single axle generator trailer with its trailer tongue resting on the aircraft cargo compartment floor? _____

AIR MOVEMENT RESTRAINTS



UMODD03
TBOLC 500-500-14

1

AIRCRAFT SHORING FUNDAMENTALS

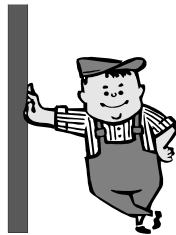
LOAD AND SECURE CARGO FOR AIR MOVEMENT

REFERENCE

DOD 4500.9-R DEFENSE TRANSPORTATION REGULATION
PART III MOBILITY

2

Shoring



3

Shoring

- Lumber or planking material
- Protects aircraft cargo floor and ramps from damage
- Increases cargo contact areas for better load distribution
- Decreases the approach angle of the aircraft cargo ramps
- Provided by transported unit
- **Minimum thickness for all shoring = 3/4 inch.** Actual dimensions driven by weight, contact area and aircraft limitations
- Aircraft load master will supervise the placement of shoring on the cargo floor to maximize its effectiveness

4

Types of Shoring

- Rolling
- Parking
- Sleeper
- Special



5

Rolling Shoring

- Used on ramps and cargo floor areas over which a vehicle must roll when being loaded/unloaded from an aircraft
- Protects aircraft floors and ramps from damage
- Used primarily with tracked vehicles (any vehicle with tracks, cleats, studs or other gripping devices or treads where there will be metal-to-metal contact requires rolling shoring). Generally not required for wheeled vehicles as they do not exceed weight limitations (Tracked vehicles could deploy with new rubber pads but redeploy with worn pads & need shoring)
- Any equipment requiring rolling shoring requires parking shoring

6

Rolling Shoring (cont)



Rolling shoring used on aircraft ramp

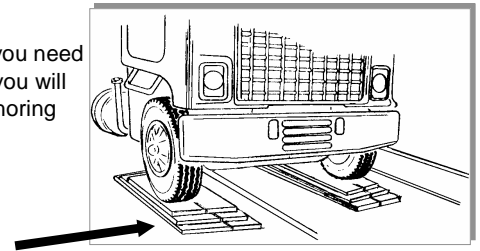


Used to protect the floor from vehicles with cleats, studs or other gripping devices

7

Parking Shoring

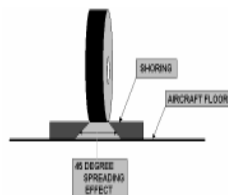
- Generally, if you need rolling shoring you will need parking shoring



8

Parking Shoring (cont)

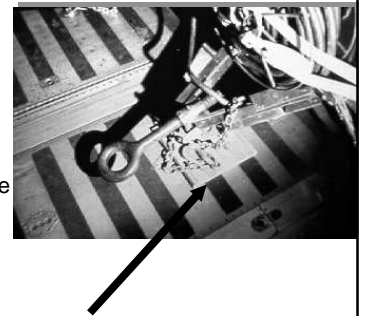
- Used under items when loaded and parked aboard the aircraft
- Protects aircraft floor from damage during flight
- Prevents metal-to-metal contact of cargo with aircraft cargo compartment floor (consider blades, buckets, fork-lift tines etc)
- Distributes cargo weight over a large contact area of cargo compartment floor



9

Parking Shoring (cont)

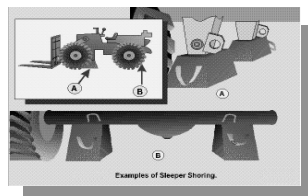
- All trailers with a tongue that could rest on the aircraft floor should be shipped with parking shoring, whether connected to or disconnected from its prime mover



10

Sleeper Shoring

- Use under frames or axles of vehicles that weigh over 20,000 pounds with soft, low pressure, balloon-type, off road tires that are not designed for highway travel (eg forklifts, road graders etc)
- Sleeper shoring used to prevent the vehicle from bouncing up and down and possibly pulling the tie down rings out of aircraft floor
- Placed flush as practical with axle or chassis and secured to prevent movement



Examples of Sleeper Shoring

11

Special Shoring

- All other types of shoring
 - Approach shoring
 - Ramp pedestal shoring



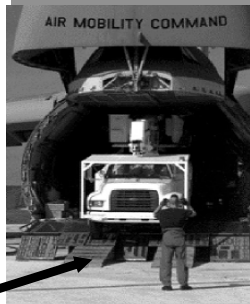
12

Special Shoring - Approach Shoring

- Use approach shoring to decrease the approach angle of aircraft loading ramps
- Prevents tall and long items of cargo from striking the aircraft or ground during loading/offloading operations



13



Special Shoring - Approach Shoring (cont)

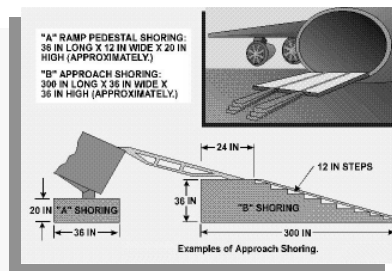
- Decreases angle or slope of the aircraft cargo ramp
- Reduces upward projection of cargo to provide overhead and/or ground clearance
- No standard method
- Used when ground clearance is limited
- Examples:
 - Most helicopters
 - All 40K loaders
 - Long vehicles



14

Special Shoring - Ramp Pedestal Shoring

- Decreases angle of the aircraft cargo ramp
- Consists of lumber placed under the aft end of the cargo ramp



15

FUNDAMENTALS OF RESTRAINT

- RESTRAINT CONSIDERATIONS
 - GRAVITY FORCE "**G's**"
 - GROSS WEIGHT OF CARGO (ITEM)
 - RATE OF CHANGE "**SPEED**"

16

RESTRAINT CRITERIA

- **FORWARD** 3.0 G's
- **AFT** 1.5 G's
- **LATERAL (L/R)** 1.5 G's
- **VERTICAL** 2.0 G's

C-130, C-5, C-17

17

KC-10 AIRCRAFT NOTE

Forward restraint for KC-10 is 9.0 G's without a barrier net.

Standard is 1.5 G's with barrier net installed. All other directional restraint is the same as the other cargo aircraft.

18

RESTRAINT EQUIPMENT

◆ CHAINS & DEVICES

OMB-1 10,000 LB

OMB-2 25,000 LB

◆ STRAPS

OCGU-1/B 5,000 LB

19

RULES OF APPLICATION

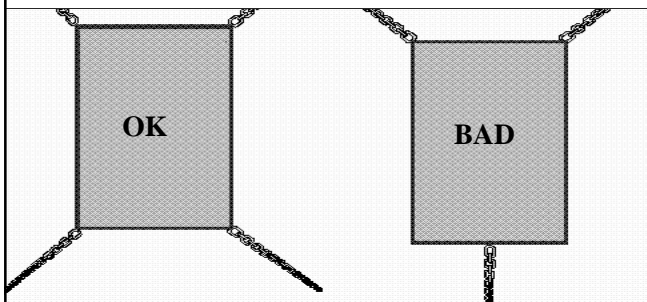
- ◆ Attain required directional restraint
- ◆ Attach symmetrically and in pairs
- ◆ Attach to primary points
- ◆ No more than half to axles - one direction
- ◆ Don't cross brake lines or cables

20

TIE-DOWNS

SYMMETRICAL

NON-SYMMETRICAL

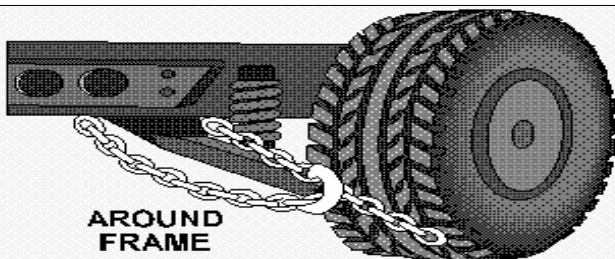


ATTACHMENT POINTS

- Bumper (Use clevises if installed)
- Frame
- Axle

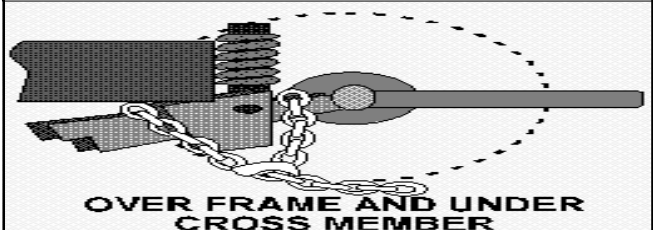
22

Attach tie-down devices to designed tie-down points such as lifting shackles, if available. If they are not available use strong structural points such as frame members, bumper supports, or axles.



23

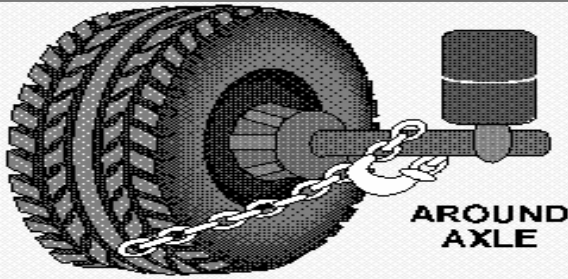
Over the frame and under the cross member is similar to restraining the axle which mainly restrains unsprung weight (axles, tires, etc.) as opposed to restraining the frame which is sprung weight (all weight above the springs and axles).



24

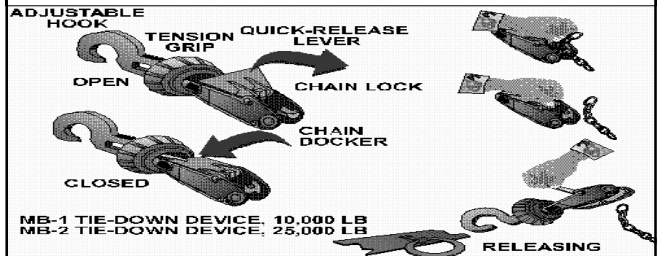
When using the axle as a tie-down point, do not depend on friction or tension to prevent the chain from sliding.

Place the chains against something solid such as brackets or housings. Use no more than 50% of restraint on axles in any given direction, and do not crush air, hydraulic, or fuel lines.



25

- Turn the rings in the floor and tie-down fittings so that tension is applied to the top of the ring.
- Attach the hook end of tie-down to aircraft floor & chain's hook to cargo.

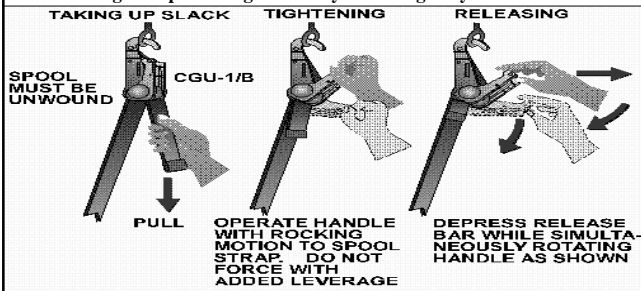


26

CGU-1/B CARGO STRAP

Use protective padding when using the CGU-1/B strap to secure cargo with edges.

Use cargo straps on cargo that may be damaged by chains.



27

PREFERRED ANGLES OF APPLICATION

- 30 DEGREE PLAN & 30 DEGREE FLOOR ANGLE
(30 X 30)
- 45 DEGREE PLAN & 45 DEGREE FLOOR ANGLE
(45 X 45)

28

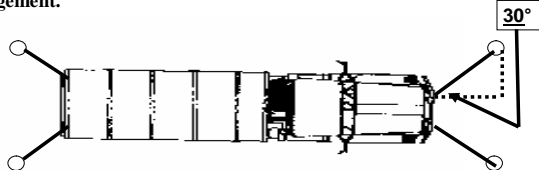
TIE-DOWN PATTERN

Whenever possible, install tie down devices at an angle of 30° from the cargo floor and 30° from the longitudinal axis.

Lead the tie-down directly from floor fitting to the load being controlled.

Tie-down devices and fittings must be equal strength.

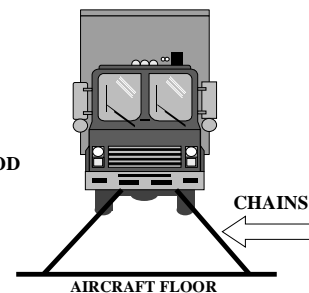
Tighten devices so that equal tension is maintained throughout the arrangement.



29

METHODS OF APPLICATION

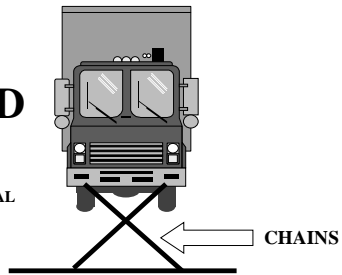
OPEN
PREFERRED METHOD



30

METHODS OF APPLICATION**CLOSED**

(CROSSED)

WITH AIRCRAFT
LOADMASTER APPROVAL

31

PERCENT EFFECTIVENESS

- $30^\circ \times 30^\circ = 75\%$
- $45^\circ \times 45^\circ = 50\%$

32

APPROXIMATE RESTRAINT OBTAINED

- $30^\circ \times 30^\circ$ 10,000 lbs. x 75% = 7,500 lbs.
MB-1

- $45^\circ \times 45^\circ$ 10,000 lbs. x 50% = 5,000 lbs.
MB-1

- $30^\circ \times 30^\circ$ 25,000 lbs. x 75% = 18,750 lbs.
MB-2

- $45^\circ \times 45^\circ$ 25,000 lbs. x 50% = 12,500 lbs.
MB-2

- CGU-1/B 5,000 lbs. x 75% = 3,750 lbs.

33

RESTRAINT FORMULA

$$\frac{\text{RESTRAINT CRITERIA (G) x WEIGHT OF ITEM}}{\text{APPROXIMATE RESTRAINT OBTAINED}} = \text{\# OF TIEDOWNS REQUIRED}$$

Take the directional restraint in Gs and multiply it by the gross weight of the item of cargo to be restrained. Then divide this number by the approximate amount of restraint coming from the tie-down chains/devices based on the angle applied (30x30 angle or 45x45 angle). The result is the number of chains needed (in even numbers) to secure the cargo for that given direction.

34

SAMPLE APPLICATION**OF FORMULA**

(USING MB-1 CHAINS/DEVICES)

$$\frac{3.0 \text{ G's FWD x } 10,000 \text{ lb. item}}{7,500 \text{ LBS}} = ?$$

chains required

35

SAMPLE SOLUTION FOR FORMULA

$$\frac{30,000}{7,500} = 4$$

- REQUIRES 4 CHAINS

36

SAMPLE PROBLEM**SITUATION:**

A 20,000 LB. VEHICLE IS TO BE RESTRAINED USING MB-2 CHAINS AND DEVICES AT A 30° x 30° ANGLE.

HOW MANY CHAINS ARE REQUIRED ?

37

SAMPLE PROBLEM

RESTRAINT CRITERIA	X	WEIGHT OF ITEM	=	REQUIRED RESTRAINT	÷	APPROXIMATE RESTRAINT OBTAINED	=	# OF TIEDOWNS REQUIRED
FWD 3.0	X		=		÷		=	
AFT 1.5	X		=		÷		=	
LAT 1.5	X		=		÷		=	
VERT 2.0	X		=		÷		=	

38

RESTRAINT FORMULA

$$\frac{\text{RESTRAINT CRITERIA (G) x WEIGHT OF ITEM}}{\text{APPROXIMATE RESTRAINT OBTAINED}} = \text{\# OF TIEDOWNS REQUIRED}$$

Take the directional restraint in Gs and multiply it by the gross weight of the item of cargo to be restrained. Then divide this number by the approximate amount of restraint coming from the tie-down chains/devices based on the angle applied (30x30 angle or 45x45 angle). The result is the number of chains needed (in even numbers) to secure the cargo for that given direction.

39

APPROXIMATE RESTRAINT OBTAINED

- 30° x 30° 10,000 lbs. x 75% = 7,500 lbs.
MB-1

- 45° x 45° 10,000 lbs. x 50% = 5,000 lbs.
MB-1

+++++

- 30° x 30° 25,000 lbs. x 75% = 18,750 lbs.
MB-2

- 45° x 45° 25,000 lbs. x 50% = 12,500 lbs.
MB-2

+++++

- CGU-1/B 5,000 lbs. x 75% = 3,750 lbs.

40



IN GENERAL, PROPER APPLICATION OF FORWARD AND AFT RESTRAINT WILL SATISFY LATERAL AND VERTICAL RESTRAINT.

CONSULT WITH AIRCRAFT LOADMASTER FOR ANY ADDITIONAL RESTRAINT REQUIREMENTS.

41

SUMMARY

SHORING

CRITERIA

EQUIPMENT

APPLICATION

EFFECTIVENESS

FORMULA

42

		RESTRAINT CRITERIA (G) X WEIGHT OF ITEM				=		NUMBER OF TIEDOWNS REQUIRED	
		APPROXIMATE RESTRAINT OBTAINED							
	RESTRAINT CRITERIA	X	WEIGHT OF ITEM	=	REQUIRED RESTRAINT	÷	APPROXIMATE RESTRAINT OBTAINED	=	# OF TIEDOWNS REQUIRED
----->									
SAMPLE PROBLEM	FWD	3.0	X		=		÷		=
	AFT	1.5	X		=		÷		=
								TOTAL TIEDOWNS	
1. TRUCK									
	FWD		X		=		÷		=
	AFT		X		=		÷		=
1. TRAILER									
	FWD		X		=		÷		=
	AFT		X		=		÷		=
								TOTAL TIEDOWNS	
2. TRUCK									
	FWD		X		=		÷		=
	AFT		X		=		÷		=
								TOTAL TIEDOWNS	
3. TRUCK									
	FWD		X		=		÷		=
	AFT		X		=		÷		=
								TOTAL TIEDOWNS	
4. TRUCK									
	FWD		X		=		÷		=
	AFT		X		=		÷		=
4. TRAILER									
	FWD		X		=		÷		=
	AFT		X		=		÷		=
								TOTAL TIEDOWNS	
5. TRUCK									
	FWD		X		=		÷		=
	AFT		X		=		÷		=
								TOTAL TIEDOWNS	
RESTRAINT CRITERIA									
FORWARD		3.0	**The "RESTRAINT CRITERIA" shown is for the following aircraft:						
AFT		1.5	C-130, C-5, C-17**						
LATERAL (L/R)		1.5	***IN GENERAL, PROPER APPLICATION OF FORWARD AND AFT						
VERTICAL		1.5	RESTRAINT WILL SATISFY LATERAL AND VERTICAL RESTRAINT***						
APPROXIMATE RESTRAINT OBTAINED:									
MB-1 APPLIED AT A 30 X 30 ANGLE = 7500									
MB-1 APPLIED AT A 45 X 45 ANGLE = 5000									
MB-2 APPLIED AT A 30 X 30 ANGLE = 18750									
MB-2 APPLIED AT A 45 X 45 ANGLE = 12500									

AIR MOVEMENT RESTRAINTS
PE
UMODPC 612-605-01 / TBOLC 500-500-14

Practical Exercise:

1. A 2 ½ ton truck with a 1 ½ ton trailer is to be loaded aboard a C-17 aircraft. The vehicle weighs 17,000 pounds and the trailer weighs 2,500 pounds. MB-2 chains and devices will be used for the truck and the trailer. Restraint equipment will be employed at 30 x 30 angles of application. Determine the number of tie-downs required to secure each item in the aircraft.

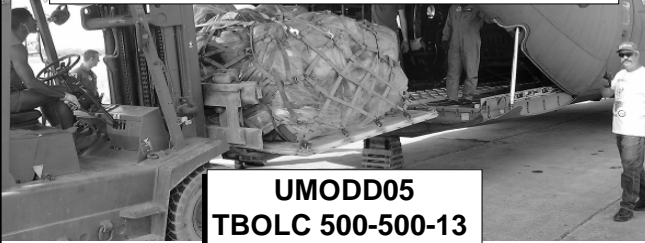
2. A 12,500-pound vehicle is to be loaded aboard a C-130 aircraft. MB-1 chains and devices will be used. Determine the number of tie-downs required to secure the vehicle using 30 x 30 angles of application.

3. A 30,000-pound vehicle is to be loaded aboard a C-5 aircraft. MB-2 tie-downs will be employed with 45 x 45 angles of application. Determine the number of tie-downs required to secure this vehicle in the aircraft.

4. A 5-ton truck-tractor with a 12-½ ton semi-trailer is to be loaded aboard a C-17 aircraft. The truck-tractor weighs 20,100 pounds and the trailer weighs 14,300 pounds. MB-2 tie-downs will be used with the 30 x 30 angles of application. Determine the number of required tie-downs to secure each item in the aircraft.

5. A 9,600-pound vehicle will be loaded on a C-130 aircraft. MB-1 chains and devices will be applied with 30 x 30 angles of application. Determine the number of tie-downs required to secure the vehicle safely in the aircraft.

463L PALLET CARGO SYSTEM



1

References

FORSCOM/ARNG 55-1, Unit Movement Planning

FM 55-9, *Unit Air Movement Planning*

2

SCOPE OF LESSON

- Features and advantages
- 3 elements of 463l cargo system
- Inspection and storage procedures
- Pallet restrictions
- Pallet build-up
- Marking and documentation
- Common errors



3

463L Pallet System

- Proper restraint of cargo is important in an air movement due to the possibility of cargo shifting during flight.
- The 463L pallet system provides deploying units with the ability to consolidate loose cargo (bulk cargo) and efficiently move it on strategic airlift

4

FEATURES

- On-site long & short term storage of equipment / materials
- Transportable by air & surface modes - military & commercial
- Lightweight durable construction

ADVANTAGES

- Reduce aircraft load and offloading times by 75%
- Utilizes aircraft more efficiently when transporting bulk cargo

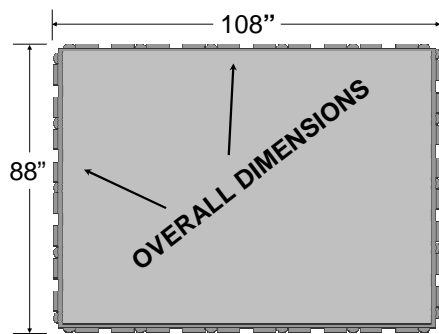
5

3 ELEMENTS OF 463L SYSTEM

- **463L PALLET & NET SET**
- **MATERIAL HANDLING EQUIPMENT**
- **AIRCRAFT ROLLERS AND RAILS**

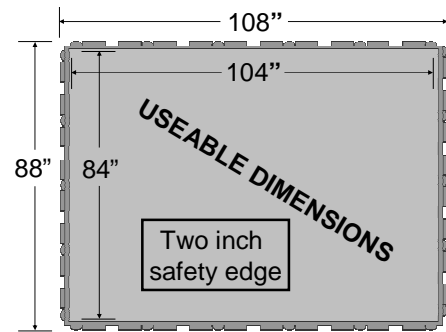
6

463L Pallet



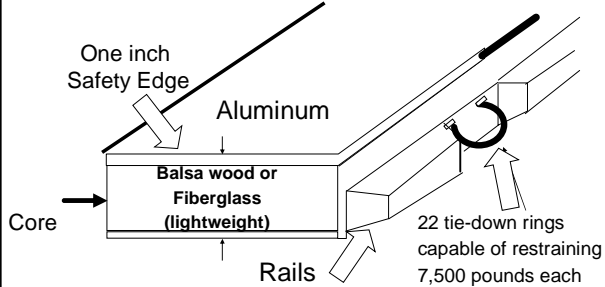
7

463L Pallet (Cont)



8

463L PALLET CONSTRUCTION



- Covering is 1/8-inch aluminum veneer sheeting, top and bottom
- Total pallet thickness is 2-1/4 inches
- Pallet empty weight is 290 pounds

9

NETS

- When all restraining nets are used the **load capacity is 10,000 pounds**
- Pallet can transport more than 10,000 pounds but load planning **cannot exceed 250 pounds PSI**
- Each net set consists of **one top net** (colored yellow) and **two sides nets** (colored green or black)
- Together the nets can restrain 10,000 pounds of cargo up to 96-inches high to a force of 3Gs
- Net set weighs 65 pounds

10

TOP NET



- **Yellow** in color
- Provides vertical restraint when used with side nets
- When used alone can restrain up to 2,500 pounds to a max height of 45 inches
- Pallet loads over 2,500 pounds require additional restraints

11

463L Pallet Nets -- Top net (Cont)

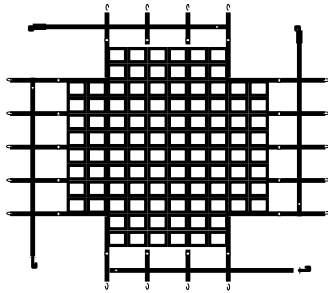
- The top net attaches by hooks to the rings on the side nets or, when used alone, to the tie-down rings on pallet.
- When a top net is used alone, the net band sewn closest to the hooks (referred to as belly band) must not be more than eight inches from the top of the pallet surface.

12

463L Pallet Nets --

Top net

Top net



13

TOP NET LOAD



14

463L Pallet Nets --

Top net (Cont)

- The top net can be used alone or with additional straps to secure the load



15

SIDE NET



- Qty of two
- **Green** or **black** in color
- Provide forward, aft and lateral restraint

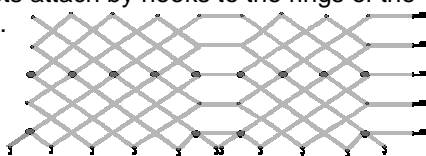
16

463L Pallet Nets --

Side Nets

- The side nets attach by hooks to the rings of the 463L pallet.

Side nets
(1 of 2)



- The side nets have a long side with six hooks and short side with five hooks to match the long and short sides of the 463L pallet.

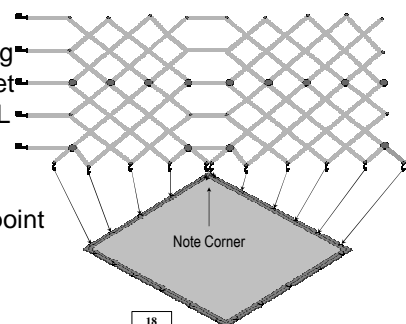
17

463L Pallet Nets --

Side Nets (Cont)

- Connecting the side net to the 463L pallet

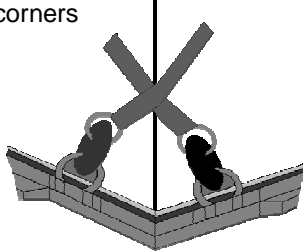
- All hooks point to inside



18

463L Pallet Nets -- Side Nets (Cont)

Straps crossed at corners



19

SECOND ELEMENT 463L SYSTEM



MHE

20

MHE Availability

- You have a responsibility to provide MHE whenever possible
- Plan and coordinate for it at deployed locations
- If you need MHE support contact your affiliated CRE



21

Forklifts Usage

- Forklifts are used to lift, transport, and stack cargo or equipment
- They aid in cargo build-up at the unit area, transporting cargo to the airfield, and aircraft loading



22

Forklifts Types



23



4K

Forklifts Tine (Fork) Extenders

- Forklift tines must be at **least 72"** long for use with the 463L pallets

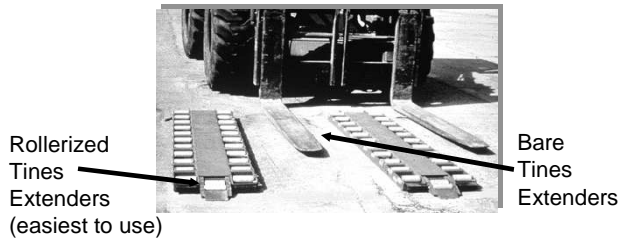


Tine Extenders

24

Forklifts Tine (Fork) Extenders (cont)

- Tine extenders provide additional length - designed in two configurations



25

Side View



26

K-Loaders

- K-loaders provide the capability to rapidly on and off load 463L pallets from airlift aircraft
- They're large and heavy, and may be difficult to transport
- Particularly useful for handling married pallets
- Early **coordination** with your affiliated CRE is essential if your unit needs one

27

K-Loaders - Types



25K



Halversen

28

K-Loaders - Types



40K

60K (Tunner)



29

K-LOADERS



25K K-Loader and Halversen

- 3 x 463L pallets with a gross weight of 25,000 pounds
- air transportable or on flatbed trailer
- Equipped with roller for ease of on/offloading
- Hydraulically raised or lowered to desired height



40K K-Loader

- 5 x 463L pallets with a gross weight of 40,000 pounds
- Same features as 25 K-Loader



60K K-Loader

- 6 x 463L pallets with a gross weight of 60,000 pounds
- Same features as 25 K-Loader

30

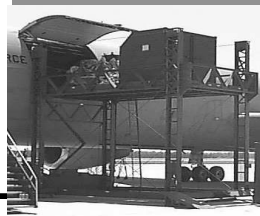
Wide Body Loaders

- The 25K-Loader and 40K- Loader without bed extender will not reach the cargo floors on wide-body aircraft (B-747, DC-10 and KC-10)
- For wide body aircraft must use the 60K (Tunner), Halversen and the 40K with a bed extender
- Wide body aircraft do not have cargo loading ramp capabilities
- May use wide body loaders for these aircraft - elevator type loader, not used for horizontal transport (requires at least one 25K-loader and 6K forklift for loading)

31

Wide Body Loaders (cont)

316A Cochran Loader (shown)
(2 x 463L pallets to gross weight of 25,000 pounds)
316E Cochran Loader
(3 x 463L pallets to a gross weight of 40,000 pounds)



CL-3 Wilson Loader
(3 x 463L pallets to a gross weight of 40,000 pounds)

32

Additional Loading Aids

- Rollerized Flatbed Trucks
 - Used when K-Loaders not available
 - Variety of sizes, lengths, and capacities
 - Rollerized flatbeds can help with speedy handling of palletized cargo
- Pallet Dollies
 - Equipped with swivel casters or rollers to aid in pallet movement
 - Have a tow bar and pintle hook for attaching to a towing vehicle or coupling the dollies into a train

33

Pallet Dolly



34

THIRD ELEMENT 463L SYSTEM

- **AIRCRAFT ROLLERS AND RAILS**
 - **USED TO LOAD AND SECURE 463L PALLETS INSIDE THE AIRCRAFT**

35

Aircraft Rails and Rollers

- C-130: permanently installed rails; rollers removable.
- C-17: rails hinged/foldable; rollers recessed into floor when not in use.
- C-5: Outboard rails permanently installed, inboard rails hinged/foldable; rollers recessed into floor when not in use.
- KC-10: rails and rollers permanently installed

36

ROLLERS INSIDE AIRCRAFT



37

PALLET LOADING



38

INSPECTION AND STORAGE PROCEDURES



39

463L Pallet Serviceability

- Inspect pallets for serviceability prior to use
 - Check both pallet sides for fractures or warping
 - Tie-down rings must move freely
 - Excessive corrosion makes pallet unserviceable
 - Check for cleanliness. Pallet must meet agricultural standards.

40

PALLET INSPECTION

- Pallet damage
- Cleanliness



41

PALLET STORAGE



- Three point dunnage, 4" X 4" X 88" pieces of lumber
- Dunnage laid under base support pallet
- Dunnage between each set of 10 pallets
- May stack as many as 50 high
- When shipping pallets, you may stack the pallets 25 high. Place dunnage between base support pallet and then stack pallets. Restrain pallets with one set of nets.

42

NET INSPECTION



• Spread nets out on dry, clean surface and check for the following:

- Tears
- Loose or torn stitching
- Missing or broken straps, rings, buckles and hooks
- Dirt, grease, foreign objects, and mildew

43

PALLET RESTRICTIONS



44

463L Pallet Restrictions

- 463L pallets load restrictions prevent damage to cargo, 463L pallets and nets, and the aircraft
- Ensure build-up pallets do not exceed the dimensional and load bearing capabilities of the aircraft.

45

463L Pallet Restrictions -- Weight Maximums

- **Maximum weight** capacity is 10,000 lbs
- Maximum load of 250 pounds for any given square inch
- Tie-down ring load must not exceed 7,500 pounds
- If top net alone is used to restrain cargo, the cargo load capacity is 2,500 lbs

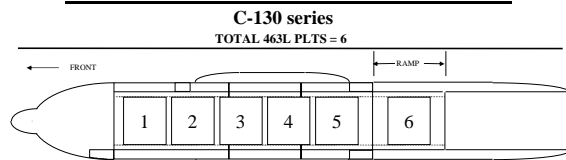
46

463L Pallet Restrictions -- Height Maximums

- Height maximums for built-up 463L pallets relate to the weight of the cargo load.
- With cargo load of 10,000 lbs - the **height will not exceed 96 inches**
- With cargo load of 8,000 lbs or less - the height will not exceed 100 inches
- When only the top net is used, the height is limited to 45 inches, and weight to 2,500 pounds

47

AIRCRAFT PALLET RESTRICTIONS

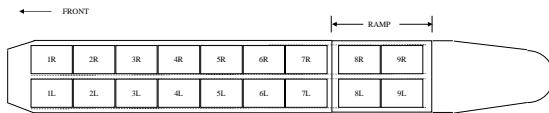


PALLET POSITION (PP)	WEIGHT (POUNDS)	HEIGHT (INCHES)	RESTRICTIONS
1-4	10,355	96	PP 3-4 Requires a 6" aisle on the left short side
5	8,500	96	
6	4,664	76	PP 6 Requires a 18" aisle on the left short side

48

AIRCRAFT PALLET RESTRICTIONS**C-17 series**

TOTAL 463L PLTS = 18



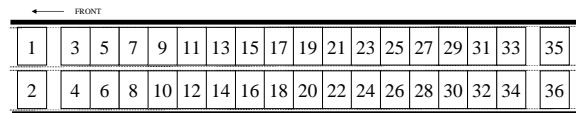
PALLET POSITION (PP)	WEIGHT (POUNDS)	HEIGHT (INCHES)	RESTRICTIONS
1R-9R	10,355	96	PP 8-9 Left & Right can not exceed a combined weight of 40,000 lbs
1L-9L	10,355	96	

ALL 463L PALLETES MUST BE ROTATED 90 DEGREES WHILE LOADING/UNLOADING FOR THIS CONFIGURATION

49

AIRCRAFT PALLET RESTRICTIONS**C-5 series**

TOTAL 463L PLTS = 36

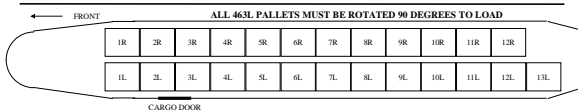


PALLET POSITION (PP)	WEIGHT (POUNDS)	HEIGHT (INCHES)	RESTRICTIONS
1-2	7,500	96	PP 1-2 Requires a 14" aisle on the outer edge of the short side
3-34	10,355	96	
35-36	7,500	70	PP 35-36 Requires a 14" aisle on the outer edge of the short side

50

AIRCRAFT PALLET RESTRICTIONS**KC-10 series**

TOTAL 463L PLTS = 25



PALLET POSITION (PP)	WEIGHT (POUNDS)	HEIGHT (INCHES)	RESTRICTIONS
1-6 L&R	6,500	*96	*Pallet Contour "C"
7-10 L&R	10,000	*96	*Pallet Contour "C"
11 L&R	10,000	*96	*Pallet Contour "D"
12 L&R	6,500	*88	*Pallet Contour "D"
13 L	6,500	*85	*Pallet Contour "E"

NOTES - 1. Pallet position 13L is not offered for user cargo.
2. All weights include weight of cargo, pallets and nets or other tiedown devices.

51



52

PALLET BUILD-UP**•Cargo Selection**

- * Determine what cargo needs to be palletized
- * Identify hazardous cargo

• Placement of Cargo

- * Load cargo from heaviest to lightest
- * Pallet center of balance
- * Large heavy items evenly positioned from center of pallet outward
- * Place hazardous cargo so markings are accessible
- * Build up dimensions and gross weight must be within limits for pallet position within aircraft type

53

Building a 463L Pallet

- Place the pallet on dunnage before beginning the build-up.

54

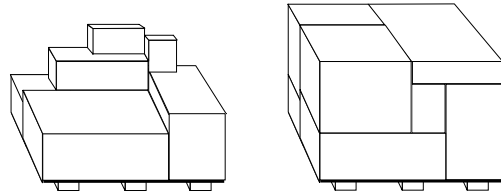
Pallet Cargo Placement

- Properly building a load on a 463L pallet contributes to the safe air movement of the cargo
- Place cargo items in square or pyramid shape when building pallet



55

463L PALLET BUILDUP

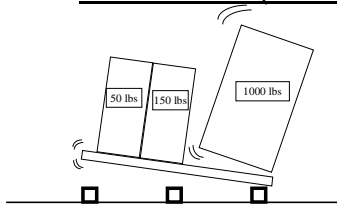


Pyramid

Square

56

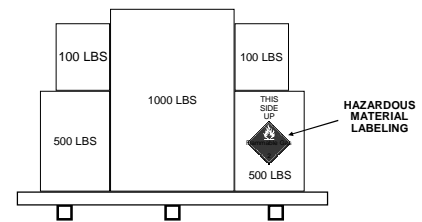
Pallet Cargo Placement (Cont)



Heavy Ended Pallet

57

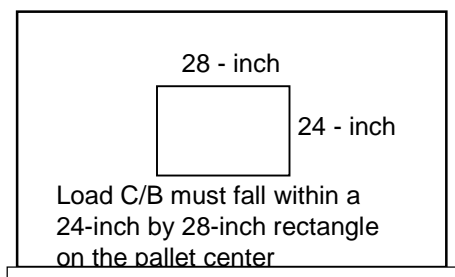
Pallet Cargo Placement (Cont)



Correct placement of cargo & labeling of hazardous materials

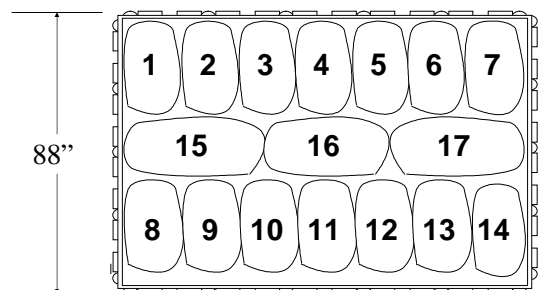
58

Pallet Cargo Placement (Cont)



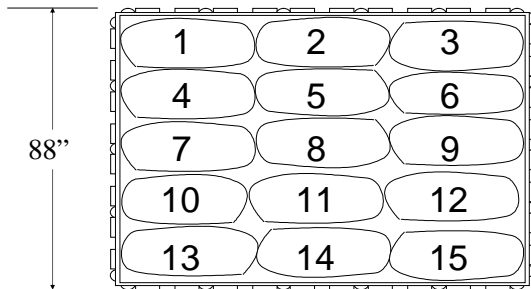
59

463L PALLET BUILDUP

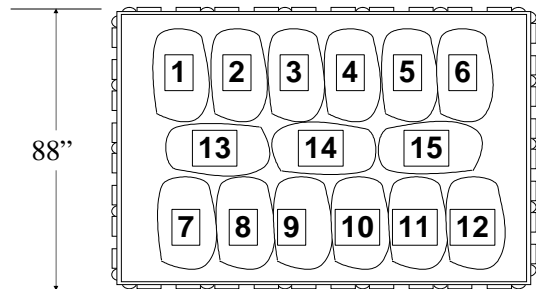


Baggage Placement: Row A - 17 Duffel Bags

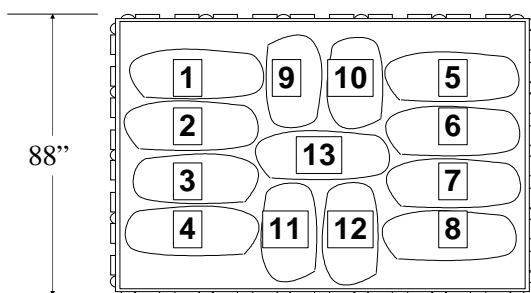
60

463L PALLET BUILDUP**Baggage Placement: Row B - 15 Duffel Bags**

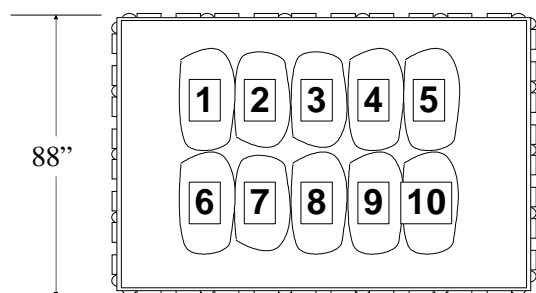
61

463L PALLET BUILDUP**Baggage Placement: Row C - 15 Duffel Bags**

62

463L PALLET BUILDUP**Baggage Placement: Row D - 13 Duffel Bags**

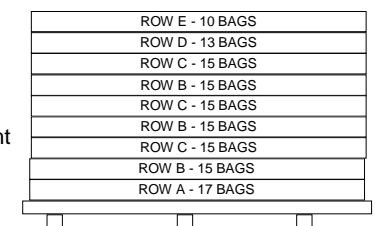
63

463L PALLET BUILDUP**Baggage Placement: Row E - 10 Duffel Bags**

64

463L PALLET BUILDUP

Alternate
Rows B & C
until the
desired height
is obtained.

**Baggage Placement: Maximum 130 Duffel Bags**

65

**Tie-down
Equipment**

- Tie-down equipment is essential to ensure the cargo is secured during flight.

Nets	CGU-LB Nylon Strap
MB-1 Tie-down chain	MB-1 Tension Device
MB-2 Tie-down chain	MB-2 Tension Device

66

Other 463L Pallet Equipment

- **Pallet covers**
 - Use plastic for water sensitive or absorbent items
 - Short term use only
- **Pallet Coupler**
 - Ties two or more pallets together
 - Used for long loads

67

Tie-down Techniques

- Tie-down techniques vary according to the items to be secured
 - The barrier and chain techniques
 - + Palletized vehicles and large heavy items are chained to pallet
 - 5,000 pound tie-down straps

68

PALLETIZED CONTAINERS



69

Net Installation

- Nets are used to secure multiple loose items that fit within the useable dimensions (84 by 104 inches) of a single 463L pallet.
 - Start at one corner and work around the pallet with side nets
 - Pull the nets as high as they will go and hook the two side nets together.
 - Center the top net over the cargo

70

Net Installation (Con't)

- Hook the top net into the side nets using the O-rings located on the top portion of the side nets for a tall load, or the O-rings located halfway up the side nets for a shorter load.
- Pull evenly on all straps opposite each other to tighten the top net.
- Tuck the loose ends of all straps into the netting to prevent snagging during loading or unloading

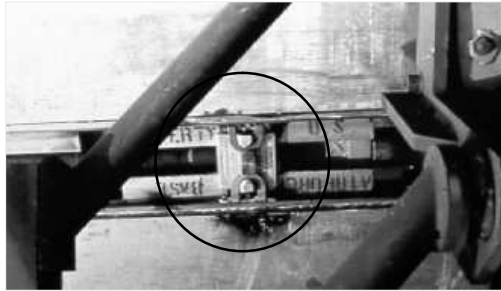
71

Married Pallets

- **Married pallets:**
 - Used for cargo that exceeds length of a single pallet.
 - Formed by joining two or more 463L pallets
 - Pallet couplers are placed in the indents along the aligned pallet sides to lock the pallets together.

72

Married Pallets Example



73

Married Pallets (Con't)

- Married pallets become a rigid structure after they are locked into the 463L rails on the aircraft.
- Pallets must be kept level during loading/unloading
- Married pallets should be constructed on high-liner docks or other platforms.

74

Married Pallet Load



high-liner dock and coupled pallet

75

MARKING AND DOCUMENTATION



76

Build and Document the Pallet

- Secure the load on the pallet using proper tie-down procedures and equipment.
- Weigh each pallet including dunnage that accompanies pallet
- Measure pallet height
- Record pallet height and weight on cargo manifest and pallet identification card

77

Pallet Markings

- The pallet requires marking to identify contents, ownership, and other information required for the air move



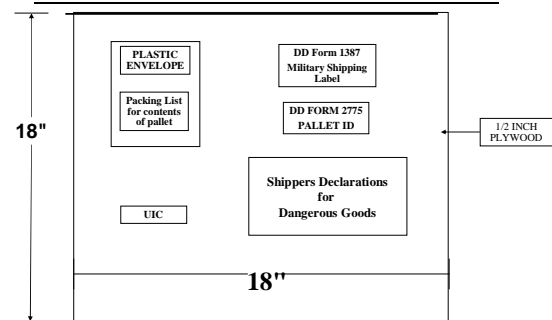
78

Pallet Board Information

- The information on the pallet board includes:
 - A packing list of the shipping containers on the pallet including any hazardous materials
 - The identification and name of the unit
 - Military shipment label and/or RF tag
 - List of points of contact & telephone numbers

79

463L PALLET IDENTIFICATION



80

PALLET IDENTIFIER CARD: DD FORM 2775

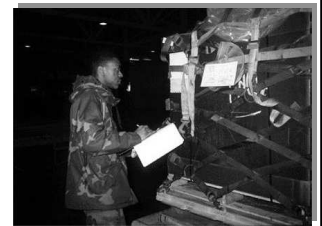
PALLET IDENTIFIER			
1. PALLET IDENTIFICATION NUMBER	2. AIRCRAFT CONFIGURATION		
3. ORIGINATING STATION	4. DESTINATION STATION		
5. NET WEIGHT (Lbs.)	6a. STRAPS	b. CHAINS	c. DEVICES
			d. NET SETS
7. MISCELLANEOUS INFORMATION/THIS PALLET CONTAINS:	8. GROSS WEIGHT (Lbs.)		
	9. SCALE WEIGHT CERTIFICATION		
	a. NAME	b. GRADE	c. DATE (YYYYMMDD)
	10. CUBE THIS PALLET		

CARGO
DD FORM 2775, SEP 1998 (EG) REPLACES AF FORM 2775, MAY 84, WHICH IS OBSOLETE.

81

Pallet Identifier (DD Form 2775) - Preparation

- Two copies of the pallet identifier (DD Form 2775) will be completed for all 463L pallet/trains loaded with cargo/mail



82

Pallet Identifier (DD Form 2775) - Preparation (cont)

- If the DD Form 2775 is unavailable, a legible substitute can be accepted with the following information, as a minimum
 - Point of Embarkation (POE)
 - Point of Debarkation (POD)
 - Gross weight
 - Net weight
 - TCN
 - Height

83

Pallet Identifier (DD Form 2775) - Preparation (cont)

- Attach the copies to the upper left hand corner at eye level (when pallet height permits)
- One on an 88" side and one on a 108" side of the pallet
- Place the form inside interlocking closure plastic bags for protection
- Entries on the form are self-explanatory
- Never reflect words "classified," "small arms/weapons," "munitions," or other highly sensitive items by name

84

Dunnage

- All pallets are required to be shipped with dunnage (usually wood)
- Dunnage is placed under 463L pallets to prevent damage to the lower pallet surface and to aid in transportation with a forklift
- User is responsible for providing dunnage for both deployment/redeployment
- Minimum dimensions of each piece of dunnage are 4" x 4" x 88" long
- Use three pieces to support each loaded 463L pallet while on the ground



85

COMMON ERRORS

- **IMPROPERLY INSTALLED NETS & STRAPS**
- **NOT USING 3-POINT DUNNAGE**
- **EXCEEDING USABLE DIMENSIONS**
- **EXCEEDING HEIGHT RESTRICTIONS**
- **EXCEEDING GROSS WEIGHT RESTRICTIONS**
- **HAZARDOUS CARGO NOT DOCUMENTED OR MARKED PROPERLY; INACCESSIBLE**

86

SUMMARY

- **FEATURES AND ADVANTAGES**
- **3 ELEMENTS OF 463L CARGO SYSTEM**
- **INSPECTION AND STORAGE PROCEDURES**
- **PALLET RESTRICTIONS**
- **PALLET BUILD-UP**
- **MARKING AND DOCUMENTATION**
- **COMMON ERRORS**

87

Ref: FM 3-35.4, pp K-2/3

PALLET BUILDING PROCEDURE CHECKLIST:

K-7. Follow safety procedures. Ensure personnel have safety shoes and work gloves. Provide a briefing on appropriate lifting procedures before beginning to build pallets.

K-8. Before building the pallet, examine it for usability.

- Is the pallet skin free of damage, top and bottom?
- Are the lips on the pallet perimeter bent?
- Are tie-down rings serviceable?
- Is the pallet level and not warped?
- Is the pallet free of corrosion?
- Is the pallet clean and free of dirt?
- Is the pallet right side up?

K-9. The building process may now begin.

- Is the pallet placed on three-point dunnage?
- Is the cargo to be placed on the pallet securely packaged?
- Does cargo have required markings?
- Are hazardous materials labels prepared in accordance with 49 CFR 172.400 and TM 38-250?
- Are hazardous material labels attached to items of hazardous cargo or their containers?
- Is cargo marked with arrows, such as, "This side up," placed with arrows pointing up?
- Are hazardous items on pallets compatible IAW TM 38-250?
- Is hazardous cargo positioned for easy access during flight?
- Are hazardous labels visible from the 88-inch side of the pallet?
- Do doors of mobility bins containing hazardous items open to an 88-inch side of the pallet?
- Are heavier boxes and crates placed on the bottom of the pallet load?
- Is lighter, more fragile cargo placed on the top of the pallet load?
- Is cargo arranged and properly stacked so it is safe?
- Is the height of the pallet 96 inches or less from the skin of the pallet?
- Does the pallet weigh less than 10,000 pounds?
- Is the 88 by 108-inch pallet loaded with no overhang?
- Has the plastic cargo cover been placed on cargo before cargo netting?
- Is the cargo secured to the pallet with two side nets and a top net?
- Does the netting have serviceable clips and hooks?
- Are the nets free of tears, rips, and broken rings?
- Are the cargo netting adjustments straps on the outside of the nets?
- Are strap ends tucked into the netting?
- Does each pallet have three-point dunnage?
- Are keys or combinations available to the troop commander for all locked items?

PALLET IDENTIFIER					
1. PALLET IDENTIFICATION NUMBER	2. AIRCRAFT CONFIGURATION				
3. ORIGINATING STATION	4. DESTINATION STATION				
5. NET WEIGHT (<i>Lbs.</i>)	6a. STRAPS	b. CHAINS	c. DEVICES	d. NET SETS	
7. MISCELLANEOUS INFORMATION/THIS PALLET CONTAINS:	8. GROSS WEIGHT (<i>Lbs.</i>)				
	9. SCALE WEIGHT CERTIFICATION				
	a. NAME		b. GRADE	c. DATE <i>(YYYYMMDD)</i>	
	10. CUBE THIS PALLET				
CARGO					

UMODPC

SEAPORT OPERATIONS UMODE01

1

References

FM 4.01-011, *Unit Movement Operations*

FM 100-17, *Mobilization, Deployment,
Redeployment and Demobilization*

FORSCOM/ARNG 55-1, *Unit Movement Planning*

2

US Transportation Command (USTRANSCOM)

- USTRANSCOM provides sea transportation assets through transportation component commands

SDDC & MSC



3

Military Sealift Command (MSC)

- MSC provides common user sealift transportation services through MSC fleet & commercially contracted carriers.
- Under USTRANSCOM / DOD directive, MSC assumes operational control of:
 - Navy Reduced Operational Fleet
 - Maritime Ready Reserve Force
 - National Defense Reserve Fleet



4

Vessel Types

- RO/RO Vessels
 - Best suited for loading & off-loading of rolling stock
 - Preferred for initial movement of pre-positioned & surge cargo
 - Spacious interiors allow easy maneuvering
 - Fast turn around time



5

Vessel Types (Cont)

- Fast Sealift Ships
 - Fastest cargo carrying vessel
 - Over 900 ft long
 - Heavy lift capability
 - Self-sustaining



6

Vessel Types (Cont)

- Container Ships



- Greatest cargo capacity
- Not optimal for moving all military cargo

7

Vessel Types (Cont)

- Breakbulk Vessels



- Able to handle most military cargo on open decks or in multiple cargo holds
- Labor intensive to load & unload

8

Military Surface Deployment and Distribution Command (SDDC)

- DOD single traffic manager for military cargo surface movements
- Responsible for all CONUS surface movements and common-user SPOE's for unit movements



9

SDDC (Cont)

- SDDC's SPOE related duties & responsibilities
 - Selecting the SPOE & coordinating vessel nominations with MSC
 - Developing vessel stow plans and supervising vessel loading
 - Preparing & issuing port call messages
 - Informing units' supporting commands & installations of all port calls issued



10

SDDC (Cont)

- Duties & responsibilities (Cont)
 - Directing PSA functions & activities
 - Receiving & staging unit equipment (PSA-specific task)
 - Establishing & directing port communications, safety policies & physical security procedures
 - Regulating port traffic



11

Transportation Terminal Brigade (TTB)

- TTBs are reserve units that provide SDDC with capability to expand number of ports available
- Responsible for monitoring DOD commercial contract cargo movements including unit equipment, re-supply, & retrograde shipments
- Uses existing port facility infrastructure and contract stevedores

12

Transportation Terminal Brigade (Cont)

- Key TSB capabilities and responsibilities:
 - Operate 2 - 5 port berths
 - Receive, load, discharge & transship unit cargo
 - Prepare and update vessel stow plan
 - Enter equipment & cargo receipt data into automated systems
 - Perform liaison with deploying units

13

Port Support Activity (PSA)

- The PSA is a temporary military organization that assists the Port Commander
 - Within CONUS, designated installations provide PSAs
 - In overseas areas Area Support Groups (ASG) normally provide PSA support
 - Deploying units do not normally man or operate PSAs

14

Port Support Activity (Cont)

- PSA is tailored & unique to each port
 - Operates in direct support of the port commander
 - Primary mission is ensuring deploying unit equipment is prepared for vessel loading, and operating unique equipment in port area
 - PSA operates almost exclusively in the port staging area

15

PSA Organization

- PSA Organization based on type of equipment processing through port. Normally includes:
 - Qualified personnel to handle the physical security of classified equipment & cargo
 - Personnel with unique equipment operator skills
 - Maintenance personnel to correct deploying equipment deficiencies

16

PSA Functions

- Typical PSA functions in support of deploying units normally include:
 - Receiving, inspecting & documenting deploying equipment
 - Staging unit equipment in staging area
 - Correcting improperly secured loads and equipment configuration deficiencies
 - Operating equipment / vehicles

17

PSA Functions (Cont)

- PSA functions (Cont)
 - Providing backup organizational & limited DS maintenance capability
 - Providing physical security for staged military cargo
 - Moving deploying unit equipment according to the port traffic plan

18

PSA Functions (Cont)

- PSA functions (Cont)
 - As required, providing recovery and maintenance vehicles, administrative vehicles, ambulances & cleaning equipment
 - Assisting with aircraft support operations

19

Port Security Detachment (PSD)

- The PSD is a reserve component unit under the command authority of SDDC when mobilized
- The PSD administers the port commander's physical security plan & coordinates with the USCG for an integrated port physical security plan

20

Port Security Detachment Functions

- PSD functions include:
 - Augmenting existing port security force or controlling traffic to include port points of entry.
 - Providing escort & security for high priority shipments
 - Coordinating in-transit sensitive and classified physical security requirements
 - Establishing liaison with area police

21

Waterside Security -- USCG



- The US Coast Guard is responsible for all waterside physical security



22

Waterside Security -- USCG (Cont)

- Other USCG duties include:
 - Regulating the shipping, handling & pier side storage of hazardous cargo
 - Interfacing with HN & military authorities on storage & handling of hazards
 - Issuing hazardous cargo permits



23

Seaport of Embarkation (SPOE) Functional Areas

24

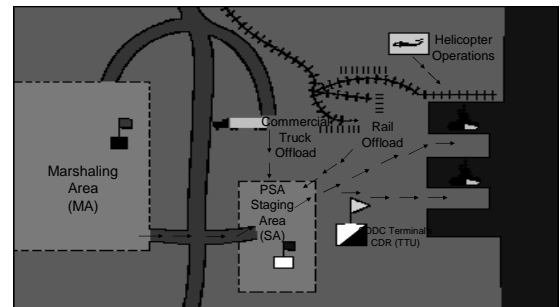
Seaport of Embarkation (SPOE)

- The loading & discharging of vessels is dedicated to rapid, efficient & controlled movement of cargo between ship & shore.



25

Notional SPOE



26

SPOE Marshaling Area

- Unit's final preparation location prior to entering POE port staging area
 - Ideally located near port staging area & vicinity of truck/rail discharge sites
 - Units inspect, reconfigure and prepare their equipment for movement to the staging area
 - In CONUS, supporting installations provide logistics support to units in marshaling area

27

Marshaling Area Layout

- There is no set organization or physical layout for an SPOE marshaling area
- Marshaling areas organized to prepare units for entry into port staging area



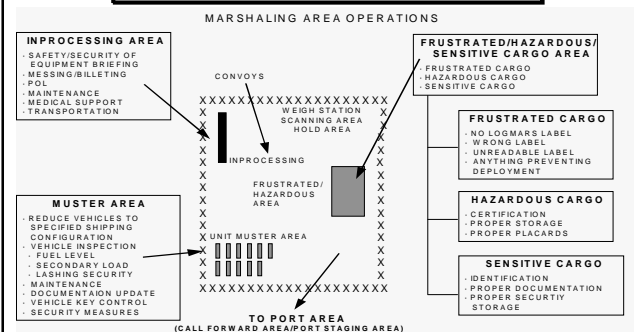
28

Marshaling Area Layout (Cont)

- The marshaling area design should:
 - Have a reception & assembly area
 - Reduce container & cargo-handling requirements
 - Permit a logical flow of vehicles, containers & cargo through to the terminal

29

Notional Marshaling Area



Marshaling Yards

- SPOE's marshaling areas may have designated marshaling yards
- In marshaling yards, cargo is subdivided into a number of categories, most commonly:
 - General (Breakbulk)
 - Containerized
 - Roll-on/roll-off
 - Special (oversize, heavy lift, hazardous & security) cargo



31

Marshaling Area Functions

- In general, marshaling areas should provide for the following functions and facilities:
 - A central control & inspection point with multiple lanes for vehicles & containers entering or leaving the marshaling yard
 - Security area for Breakbulk, containerized sensitive, classified & high-dollar-value cargo

32

Marshaling Area Functions (Cont)

- Marshaling area functions and facilities (Cont):
 - Sheltered facilities for inventory control, documentation & movement control elements
 - Covered facilities for stowing containers & cargo
 - Traffic circulation plan for movement in, through and out of the area

33

Marshaling Area Functions (Cont)

- Marshaling area functions and facilities (Cont):
 - Minor repair areas for containers & equipment
 - Cleaning area for containers & vehicles
 - Maintenance area for unit equipment
 - Equipment and vehicle parking/staging
 - Messing and comfort facilities

34

Port Staging Area

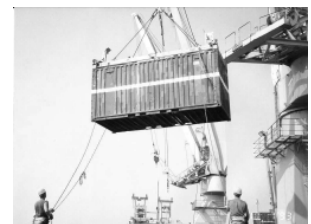
- As the vessel readies for loading, equipment is sent from the marshaling area to the staging area based on a call forward plan



35

Port Staging Area (Cont)

- SDDC terminal commander assumes custody of cargo in the staging area
- PSA performs its functions
- Equipment is loaded onto the vessel



36

Unit Responsibilities for SPOE Operations

37

Unit Responsibilities -- Home Station

- Unit Preparation for sealift begins at home station
- Equipment & documentation preparation completed (to extent possible) prior to departing for SPOE
 - Vehicles moving by convoy & rail to SPOE must be reconfigured for sealift
- Proper HS preparation reduces port processing problems

38

Unit Responsibilities -- Deployment Equipment List

- Unit DEL must be accurate

C:\EXPORTS\FRONT\AVEL REPORT - UNIT EQUIPMENT LIST									
DATE: 10/24/95 TIME: 00:00 LOC: WYNNWY									
TYPE DATA: MD UNIT NAME: 1TH TRANS CO STATION: FTEUSTIS STATE: VA									
SHIPMT	UNIT	SHIPMENT	DIMENSIONS			ITEM	PLANNED	ACTUAL	IF CORR
NUMBER	LINE	DESCRIPTION	MODEL	W	H	W	W	W	OF
				INCHES	INCHES	INCHES	W	W	OF
0001	000000	TRUCK CARGO	1150	215	100	115	115	115	115
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- Arriving at SPOE with more or less equipment than reflected on DEL can delay deployment!

39

Unit Responsibilities -- Hazardous Cargo

- Hazardous cargo must be prepared & labeled IAW CFR 49 *before* it is loaded for movement
- Hazardous material must be identified & properly packaged, marked & annotated on shipping and load documents
- Improperly prepared hazardous cargo can delay shipping & cause mission failure



40

Unit Responsibilities -- Unit Liaison Team

- Deploying unit may establish a unit liaison team to facilitate movement through the port
- Team reports prior to unit arrival to establish liaison with port commander representative and PSA
- Team clarifies port processing procedures and directs unit correction of vehicle, cargo, and documentation deficiencies

41

Unit Responsibilities -- SPOE Checks & Considerations

- Final checks & considerations at the SPOE include:
 - Is equipment correctly configured for sealift?
 - Has all unit cargo documentation been completed? (MSLs, packing lists, load cards)
 - Has all hazardous cargo been properly labeled & stored according to CFR 49 and IMDGC?

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Unit Responsibilities -- SPOE Checks/Considerations (Cont)

- Final checks & considerations (Cont)
 - Has coordination with the TTB and PSA been accomplished?
 - Has return transportation been arranged for vehicle drivers and other unit personnel processing equipment at the port?
 - Have supercargoes been identified & briefed?

43

Unit Responsibilities -- SPOE Checks/Considerations (Cont)

- Final checks & considerations (Cont)
 - Are cargo & vehicles staged in marshaling area according to loading sequence?
 - Has the call forward plan to staging area been established?
 - Have all vehicle & cargo deficiencies been corrected?

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Units Responsibilities -- Supercargoes

- Deploying unit may require supercargoes during strategic sealift of unit equipment
 - Supercargoes are unit soldiers aboard vessel who accompany equipment during transit
 - Supercargoes are the deploying unit commander's on-board representative

45

Units Responsibilities -- Supercargoes (Cont)

- Supercargo Responsibilities:
 - Making periodic checks of unit cargo on-board the vessel
 - Maintaining key control of vehicles.
 - Making necessary repairs within team capabilities
 - Observing & assisting in cargo loading/discharge



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Unit Responsibilities -- Supercargoes (Cont)

- Supercargo team size is dependent on:
 - Number of vessel berths available
 - Number and type of vehicles aboard the vessel
- When multiple units deploy equipment aboard a single vessel, FORSCOM or other designated command determines supercargo allocation

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Unit Responsibilities -- Supercargoes (Cont)

- Supercargo team generally consists of:
 - OIC or NCOIC
 - Selected maintenance personnel
 - Classified/sensitive cargo escorts



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Unit Responsibilities -- Customs

- Personnel & unit equipment departing CONUS via sealift may require a pre-customs clearance inspection
- Pre-customs inspections are normally conducted by military police
- Customs officials may not open classified material without US government approval

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Unit Responsibilities -- Customs (Cont)

- DD Form 1253 (Military Customs Inspection Label) or DD Form 1253-1 (Military Customs Inspection Tag) provides documentary proof of pre-inspection
- Once cargo & vehicles have been inspected by Customs, items cannot be added or deleted

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U M O D P C

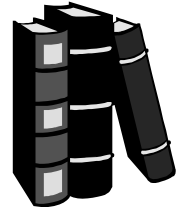
RECEPTION, STAGING, ONWARD MOVEMENT & INTEGRATION (RSO&I)

UMODE02

1

References

- FM 100-17-3: *Reception, Staging, Onward Movement and Integration (RSO&I)*
- FM 4.01-011: *Unit Movement Operations*
- FM 100-17-1: *Army Pre-positioned Afloat (APA) Operations*
- FM 100-17-2: *Army Pre-positioned Land*



2

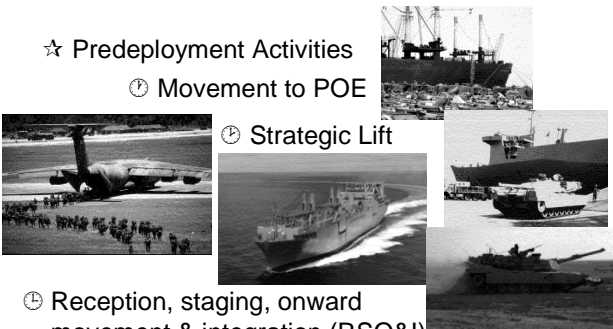
Deployment Phases

☆ Predeployment Activities

🕒 Movement to POE

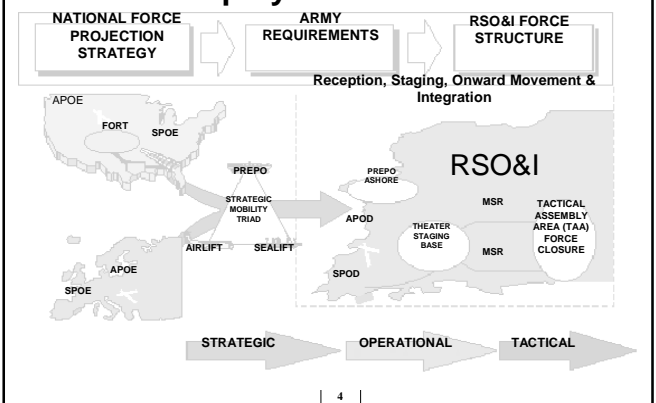
🕒 Strategic Lift

🕒 Reception, staging, onward movement & integration (RSO&I)



3

Deployment Process



4

RSO&I -- What Is It?

RSO&I -- A New Term for an Old Problem

Problem: How to receive personnel and equipment into a theater of operations, rejoin these elements into combat ready units, and integrate these units into the theater's command structure.

5

RSO&I -- Reception

Reception:

- Unloading personnel and material from strategic lift
- Marshaling arriving units
- Transporting units to staging areas (if required)
- Providing deploying soldiers life support

6

RSO&I -- Staging

Staging:

- Assembling, holding & organizing arriving personnel and equipment into units and forces
- Building combat power incrementally
- Preparing units for onward movement
- Providing deploying soldiers life support until unit is self sustaining

7

RSO&I -- Onward Movement

Onward Movement:

- Move units and accompanying material from reception facilities and staging areas to tactical assembly areas (TAAs) or other theater destinations
- Move arriving non-unit personnel to gaining commands
- Move arriving sustainment material from reception facilities to distribution sites.

8

RSO&I -- Integration

Integration:

- Synchronized transfer of authority over deploying units and forces to commander in theater
- To achieve integration--
 - + Unit must be operational and mission ready
 - + Unit must be absorbed into joint force

9

Unit and UMO Planning Considerations for RSO&I

- Review procedures and tasks in higher headquarters and theater RSO&I plans
- Is deployment opposed or unopposed?
 - For opposed operations:
 - + Units configure tactically for deployment
 - For unopposed operations:
 - + Personnel normally move by air, equipment by sea
 - + Personnel & equip reassembled into tactical units upon arrival in theater

10

Unit & UMO Planning Considerations RSO&I (Cont)

- Is the unit drawing Army Prepositioned Stocks (APS) in theater?
 - If drawing APS - Unit Cdr & UMO must review battlebook for APS site/ship.
 - Information is available in Automated Battlebook System (ABS)

11

Unit & UMO Planning Considerations RSO&I (Cont)

- Develop unit battlebook with information about destination & RSO&I operations. Include:
 - Info/pictures on POD layout & facilities
 - Convoy routes
 - Plans/location for drawing APS
 - POCs & supporting commands/agencies



12

Reception



13

Possible Reception Scenarios

- **Scenario 1.** Soldiers arrive by air at APOD, equip arrives by sea at SPOD. Soldiers and equipment reassembled at in-theater staging base
- **Scenario 2.** Soldiers arrive at APOD, then move to APS land or afloat locations to draw APS

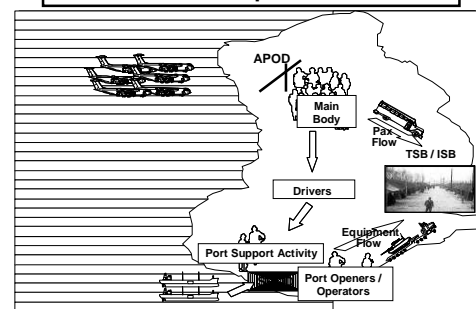
14

Scenario 1

- Soldiers arrive by air at APOD
 - Vehicle drivers move to SPOD
 - Unit main body moves to theater staging base
- Equipment arrives at SPOD
 - Drivers and mechanics prepare equipment for movement to theater staging base
- Equipment & soldiers reassembled at TSB

15

Scenario 1 -- Air and Sea Reception



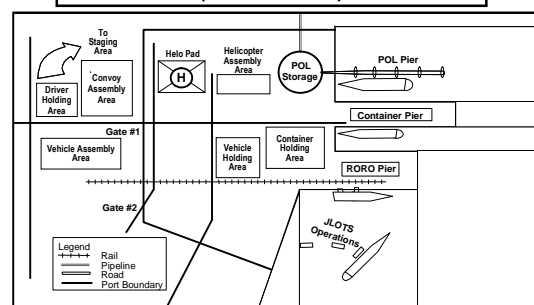
16

SPOD Operations -- Joint Water Port Complexes

- Equipment arrival at Joint Water Port Complex
 - May be large complex with multiple piers (POL, RO/RO, container) & area for JLOTS operations
 - Includes terminal support functions/areas:
 - + Transportation mode ops & movement control
 - + Port Support Activity
 - + Convoy and helicopter assembly areas
 - + Vehicle, cargo and container holding areas

17

Joint Water Port Complex (Notional)



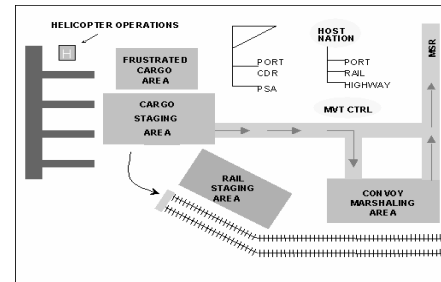
18

SPOD Operations -- Key Organizations and Activities

- Arriving unit interfaces with and is supported by:
 - SDDC -- Single Port Manager
 - Port Support Activity (PSA)
 - Movement Control Teams (MCT)
 - ASG or other designated supporting units

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SPOD Organization (Notional)



20

SPOD Operations -- Port Operating Area

- Port Area includes ship discharge area and port staging area
- **SDDC** manages port operations in port area
 - Discharges unit equipment from vessel
 - Stages equipment in port staging area
 - Releases equipment to unit

21

SPOD Operations -- Port Operating Area (Cont)

- **Port Support Activity (PSA)** operates in direct support of SDDC
- PSA operates in port staging area
 - Receives & stages discharged equipment
 - Provides licensed vehicle operators for all types of equipment
 - As required, provides maintenance capability to support arriving unit vehicles

22

SPOD Operations -- Port Operating Area (Cont)

- **Area Support Group (ASG)** (or other designated organization)
 - May provide life support / services for deploying unit
- **Movement Control Organizations**
 - Port & Area MCTs operate in SPOD ops area
 - Assist units in onward movement
 - Coordinate & task for transportation assets required by deploying unit

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SPOD Operations -- Port Marshaling Area

- **Arriving Unit** activities
 - Reinstall equipment removed for strategic deployment
 - Unpack containers and repack cargo as vehicle secondary loads
 - Perform maintenance checks and refueling
 - Prepare and organize equipment for onward movement (convoy, rail, inland water)

24

SPOD Operations -- Port Marshaling Area (Cont)

- **Arriving Unit** activities (Cont)
 - Port marshaling area may not be available
 - Units may have to move directly to destination
 - Prepare and organize equipment for onward movement at port staging area
 - Must coordinate with port commander to reduce interference at port

25

SPOD Operations -- UMO Considerations & Duties

- Advance movement planning prior to theater arrival
 - Based on RSO&I plan, higher hq's guidance
- Coordination with MCT at APOD for transporting:
 - Advance party teams such as vehicle drivers to SPOD
 - Main body to theater staging base

26

SPOD Operations -- UMO Considerations/Duties (Cont)

- UMO Coordination at SPOD:
 - Port Manager staff & PSA for receiving unit equipment
 - Movement Control Agency or MCTs for onward movement of equip to theater staging base

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SPOD Operations -- UMO Considerations/Duties (Cont)

- Equipment could move to TSB by convoy, rail, military/commercial truck, inland waterway
 - UMO coordinates with MCT for required transportation assets, convoy clearances, local movement procedures
 - UMO coordinates with designated support units operating railheads, convoy assembly areas

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SPOD Operations -- UMO Considerations/Duties (Cont)

- Split UMO operations?
 - UMO representative may have to be at APOD
 - UMO representative may have to be at SPOD
 - UMO may have to coordinate at TSB or other designated areas
- UMO must oversee various operations & use alternate UMO or have knowledgeable rep

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Scenario 2

- Soldiers, TAT and non authorized prepositioned (NAP) items arrive APOD
- Arriving unit will draw APS from:
 - Army Prepositioned Afloat (APA) vessels that sail to the theater, or
 - Army Prepositioned Land (APL) sites located in theater

30

Scenario 2 (Cont)

- For APA operations, unit moves from APOD to seaport in following sequence:
 - Survey, Liaison, Reconnaissance Party (SLRP)
 - Advance party
 - Off-Load Preparation Party (OPP)
 - PSA personnel (if required)
 - Main body
- For APL operations, advance party moves from APOD to APS site, followed by main body

31

Unit & UMO Considerations for APS Operations

- References are:
 - FM 100-17-1, *APA Operations*, provides doctrine and procedures for afloat operations
 - FM 100-17-2, *APL Operations*, provides doctrine and procedures for ashore (land) operations

32

Unit & UMO Considerations for APS Operations (Cont)

- For APS operations, unit will generally operate as part of battalion or brigade size forces
- UMO gathers available information about move to APS sites before unit arrives theater
 - Coordination with Bn/Bde movement officers & S-4
 - Unit plans based on higher hq's plans

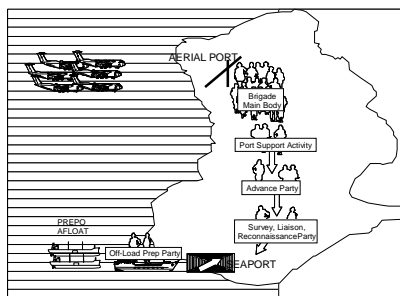
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Unit & UMO Considerations for APS Operations (Cont)

- Unit Commander and UMO must access ABS
 - Army Materiel Command's ABS contains:
 - + Battlebooks for APS sites / vessels
 - + APS equipment listing by UIC
 - + Equipment draw procedures & site information
 - + Unit checklists for APS operations
 - ABS info available at <http://www.battlebooks.com> or for AKO users go to Organizations / Logistics / Battleweb / Battleweb

34

Army Prepositioned Afloat (APA) Reception



35

Army Prepositioned Afloat (APA) -- Key Organizations

- Unit interfaces with and is supported by:
 - SDDC & Composite Transportation Group (CTG)
 - + SDDC is port manager, CTG is port operator
 - + CTG operates SPOD and is responsible for onward movement of equip and personnel
 - PSA: Performs normal PSA functions

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APA -- Key Organizations and Activities (Cont)

- Unit interfaces with and is supported by: (Cont')
 - Offload Preparation Party (OPP)
 - + AMC controlled team consisting of AMC, SDDC and contractor employees
 - + Purpose is to discharge, process and transfer APA equipment to unit
 - + Deploying unit generally provides representative to OPP

37

APA -- Unit Organization for APA Operations

- Survey, Liaison, Reconnaissance Party (SLRP)
 - Includes reps from deploying unit, MCT, AMC & port commander
 - Arrives SPOD prior to APA vessel arrival
 - Purpose:
 - + Reconnaissance, liaison with theater authorities
 - + Prepare for advance party & main body arrival

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APA -- Unit Organization for APA operations (Cont)

- Advance Party
 - Formed from deploying unit(s)
 - Primary tasks:
 - + Arrange for reception of unit main body
 - + Rendezvous with APA ships
 - + Assist in port support and discharge operations
 - Should include battery teams, fuel handlers, drivers, property book & supply personnel

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APA -- Unit Organization for APA operations (Cont)

- PSA: Unit may be required to provide own or supplement PSA at SPOD
- Unit Main Body
 - + Receives and stages unit equipment at the APA site in SPOD holding area
 - + Moves to TAA or other designated location
 - + Prepares for continued operations

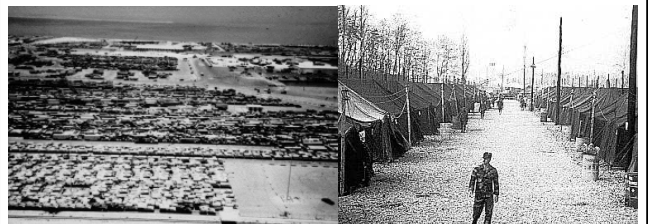
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Army Prepositioned Land (APL) -- Unit Organization for APL Operations

- Unit Advance Party
 - Moves from APOD to APL location
 - Signs for unit APS equipment
 - Moves Equipment to marshaling area in vicinity of APL site

41

Staging



42

Staging (Cont)

- Staging Process:
 - Reassemble and reunite units with their equipment
 - Upload unit basic loads
 - Prepare and schedule units for onward movement to TAA
 - Provide life support until unit is self sustaining

43

Theater Staging Base (TSB)

- TSBs provides an arm, fuel, fix capability. They include:
 - Marshaling areas, maintenance shelters
 - Equipment calibration, weapons boresighting
 - Fuel and ammo storage
 - Test driving loop and range areas

44

Theater Staging Base Layout (Notional)



45

TSB -- Unit and UMO Movement Tasks

- Coordinate with MCT for onward movement schedule and movement procedures, by mode.
- Reconfigure unit equipment for onward movement mode (rail, road, inland/coastal water)
- Process necessary movement documentation (convoy requests, rail load plans)
- Coordinate with supporting units responsible for rail loading and convoy assembly operations.

46

Onward Movement



47

Onward Movement (Cont)

- Onward Movement Process:
 - Moving units & materiel from reception facilities and staging bases to TAA or other destinations
- Onward movement is normally planned, scheduled and controlled by movement control agencies, battalions and teams.
- Numerous forces and host nation traffic may be competing for movement over same LOC.

48

Onward Movement -- UMO Considerations & Tasks

- UMO tasks essentially same as covered in APOD/SPOD preparation for onward movement
- Support facilities, such as convoy support centers, may be established to support unit onward movement
- Security concerns can impact unit organization for onward movement

49

Integration



50

Integration Process

- To achieve integration, the unit:
 - Must become operational and mission-ready
 - move, fight and communicate
 - Must be absorbed into the joint force
- Integration is complete when receiving commander establishes command & control over arriving unit

51

U M O D P C

REDEPLOYMENT UMODE03

1

References

FM 4-01.011: *Unit Movement Operations*

FM 100-17: *Mobilization, Deployment, Redeployment, Demobilization*

FM 100-17-5: *Redeployment*



2

Redeployment Defined

- The transfer of a unit deployed in one location:
 - to another area for employment
 - to home station

3

Redeployment Phases

- **Ph I.** Recovery and Reconstitution, and Predeployment Activities
- **Ph II.** Movement to and Activities at POE
- **Ph III.** Movement to PODs
- **Ph IV.** Reception, Staging, Onward Movement & Integration



4

Ph I. Recovery, Reconstitution and Predeployment Activities

- After completing military operations, units move to assembly areas to prepare for redeployment
- Redeployment reconstitution focuses on:
 - Attaining required unit readiness levels
 - Equipment accountability and cross leveling of equipment and personnel

5

Redeployment Planning

- Redeployment OPLAN is key document. Normally contains guidance on:
 - Recovery and reconstitution activities
 - Movement of units, individuals and materiel
 - Re-establishment of APS stocks that were drawn during deployment
- Units develop their redeployment movement plans based on higher hqs plans

6

Key Redeployment Organizations

- Army Service Component Command (ASCC) or Army Forces (ARFOR) commander:
- Plan reconstitution and redeployment of Army forces based on Joint Force Commander (JFC) guidance
- Identifies organizations responsible for supporting redeployment

7

Key Redeployment Organizations (Cont)

- Theater Support Command:
 - Coordinates logistics support for redeploying units including:
 - + Field services (laundry bath)
 - + Maintenance and customs requirements
 - + BBPCT needs

8

Key Redeployment Organizations (Cont)

- Installations
 - Receive redeploying units at POD
 - Coordinate and support unit movements from POD to home station or demobilization station

9

Redeployment Transit Areas

- Areas designated to support redeployment movement from AO to final destination
Includes:
 - Assembly Area (AA)
 - Redeployment Assembly Area (RAA)
 - Marshaling Areas & Staging Areas
 - ASCC/ARFOR will designate transit areas

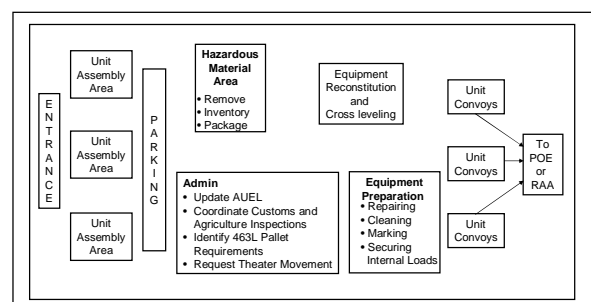
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Assembly Area

- Assembly Area (AA):
 - Designated for units to assemble in after completion of operational mission
 - Unit moves to AA for initial redeployment preparation
 - AA activities include reorganization, cross leveling of supplies, and preparation for movement to RAA or port area.

11

Assembly Area (notional)



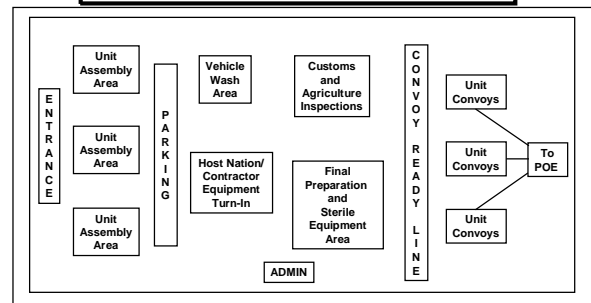
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Redeployment Assembly Area

- Redeployment Assembly Area (RAA):
 - RAA focus is preparation for move to POE
 - Normally located in COMMZ
 - RAA may be established due to security concerns, or when AA support is not adequate for redeployment preparation

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Redeployment Assembly Area (notional)



14

Theater Staging Base (TSB)

- Theater Staging Base:
 - Established to support movements over long lines of communication (LOC)
 - May be required for redeployment of large forces

15

Marshaling Areas

- Marshaling Areas at POEs:
 - Final unit preparation area prior to moving to POE operations area
 - Personnel and equipment separated
 - Equipment configured for shipment
 - Generally includes call forward areas (CFA) and sterile areas.

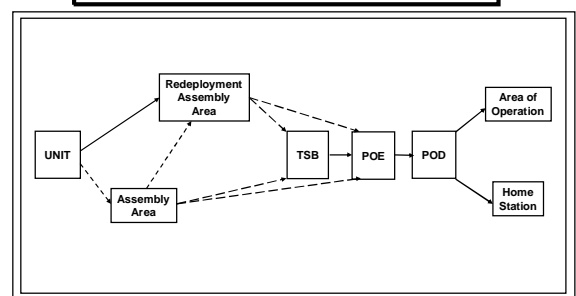
16

Redeployment Routing

- Redeployment plan identifies redeploying unit routing
- Routing considerations include:
 - Size of redeploying force
 - Distance to POE
 - Time available
 - Enemy activity

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Redeployment Routing Scenarios



18

Supporting Commands, Unit & UMO Redeployment Activities -- Phases II through IV

Phase II. Movement to & Activities at POE

Phase III. Movement to POD

Phase IV. RSO&I

19

Ph II. Movement to POE Activities -- ASCC/ARFOR

• **ASCC/ARFOR** Actions:

- Develop OPORD for redeployment -- Provide info for redeployment requirements and procedures
- Develop redeployment timelines
- Verify unit movement and readiness data

20

Ph II. Movement to POE Activities -- TSC

• **Theater Support Command (TSC)** Actions:

- Establish procedures to process APS & excess materiel
- Establish & operate convoy support centers and POE marshaling areas
- Control unit movements to POE

21

Phase II. Movement to POE Activities -- Redeploying Unit

• **Unit & UMO** Movement Activities in AA or RAA:

- Develop and refine the DEL / UDL
 - Pack and load containers -- must comply with agriculture and customs requirements
 - Identify BBPCT, container, flatrack and 463L pallet requirements

22

Phase II. Movement to POE Activities -- Unit (Cont)

• **UMO & Unit** Movement Activities in AA or RAA: (Cont')

- Conduct wash-down and customs inspection
- Prepare to provide load teams & drivers to POE
- Process excess equipment for turn-in
- If deploying to new theater for operations, draw and receive required equipment

23

Phase II. Movement to POE Activities -- Unit (Cont)

• **UMO & Unit** Movement Activities in AA or RAA: (Cont')

- Load equipment, containers, flatracks and 463L pallets -- Coordinate with customs prior to loading containers & military vans (MILVANS)
- Configure equipment for transport (e.g., convoy, rail)

24

Phase II. Activities at the POE

- Units redeploy through APOEs and SPOEs
Could also redeploy via rail and road
- POE procedures are same for redeployment to home station & redeployment to second theater of operations

25

Phase II. Activities at the POE -- TSC

- **TSC** Activities:
 - Control unit moves from combat zone to POE
 - Operate marshaling area/equipment turn-in sites
 - Provide or coordinate DACG & PSA support, as required

26

Phase II. Activities at the POE-- Redeploying Unit

- **UMO & Unit** Movement Activities upon arrival at POE
 - Unit normally moves to POE marshaling area
 - Unit prepares unit equipment & personnel for processing through POE operations areas
 - Send liaison officer to POE operations area and equipment turn-in/issue sites

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Phase II. Activities at the POE -- Redeploying Unit (Cont)

- **UMO & Unit** Movement Activities upon arrival at POE (Cont')
 - Move equipment to turn-in sites, as required
 - Move load teams to APOE/SPOE operating areas, as required
 - Load containers that were not stuffed in assembly areas

28

Phase II. Activities at the POE -- Redeploying Unit (Cont)

- **UMO & Unit** Movement Activities upon arrival at POE (Cont')
 - Finalize movement documentation (DELs, HAZMAT, cargo load plans, MSLs, AIT storage devices)
 - Conduct customs (if not previously completed in AA or RAA)
 - Conduct final wash-down

29

Phase II. Activities at the POE Redeploying Unit (Cont)

- **UMO & Unit** Movement Activities in POE staging/operating areas:
 - Unit responsibilities & procedures for POE processing essentially same as deployment
 - APOE (marshaling area, alert holding area, call forward area, ready line)
 - SPOE (marshaling area, staging area, vessel loading area)

30

Customs and Agricultural Clearance Procedures

- Inspections can occur at any redeployment node (AA, RAA, POE, POD)
- Redeploying units coordinate inspection times with US Customs officials.
- Equipment inspection must be completed NLT 24 hours prior to departing POE

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Customs and Agricultural Clearance Procedures (Cont)

- Unit equipment cleaned and laid out prior to inspection
 - Must meet USDA standards - 100% free of soil, vegetation, pests
 - Requires wash racks and steam cleaners
 - Customs normally checks equipment at wash rack area
 - After passing inspection, equipment moves to sterile area

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Customs and Agricultural Clearance Procedures (Cont)

- Containers, pallets, crates inspected by customs as they are loaded / built
- Unit baggage:
 - Units inspect all baggage for cleanliness & prohibited items before moving to customs inspection point.
 - Customs inspects 24 hrs before departure
 - After inspection, baggage placed in sterile area

33

Customs and Agricultural Clearance Procedures (Cont)

- Redeploying Soldiers:
 - Soldiers and carry-on baggage process through customs 4-6 hrs prior to departure
 - When cleared by customs, soldiers remain in sterile area until departure.

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Ph III. Movement to POD

- From boarding at POE to offload at POD, passengers & cargo under USTRANSCOM authority
- Redeploying unit may provide supercargoes aboard ships
 - Supercargoes secure and maintain unit cargo during transit
 - Perform as unit liaison during discharge operations at SPOD

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Ph IV. RSO&I

- Units redeploying to another overseas location for operations --
 - Begin RSO&I processes at POD
- Units redeploying to home/demobilization stations --
 - Undergo reception and onward movement activities
- As RSO&I covered in previous lesson, focus is on redeployment to home/demobilization station

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Reception

- Reception process consists of:
 - Offloading personnel and equipment from strategic or operational transport
 - Marshaling local transportation
- Reception and onward movement plan developed by Supporting Installation (SI) and Commander receiving the forces

37

Reception (Cont)

- Supporting Installation functions
 - Plans / executes return of units from POD -- processes convoy requests & obtains commercial transportation
 - Establishes enroute support sites required by redeployment plan

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Reception (Cont)

- Redeploying Unit & UMO Functions at POD
 - Provide download teams and drivers to move equipment to marshaling area
 - Coordinate required customs and USDA clearance inspection with port operator
 - Perform equipment inspections & process movement documentation
 - UMO coordinates return of all equipment and soldiers with SI reps or ITO

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Onward Movement

- Defined as process of moving personnel and accompanying materiel from reception marshaling / staging areas to their destinations
- Onward movement mode is typically the same as deployment fort to POE move (e.g., convoy, rail, bus)
- UMO coordinates with SI and ITO for appropriate convoy clearances, railhead support, and enroute movement support

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Activities at Destination Installations

- Supporting Installation:
 - Provides transportation & MHE/CHE as required to assist unit unloading
- Redeploying Unit Functions:
 - Unload and turn-in equipment, as required
 - UMO updates AUEL and processes through UMC, and prepares for next possible deployment

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COMMONLY USED FORMULAS

LOAD PLANNING

Volume in cubic feet from dimension in inches: $\frac{\text{length} \times \text{width} \times \text{height}}{1728}$

ROAD MOVEMENT CALCULATIONS

Distance = Rate x Time

Rate = $\frac{\text{Distance}}{\text{Time}}$ (round up)

Time = $\frac{\text{Distance}}{\text{Rate}}$ (round up)

Time Distance = $\frac{\text{Distance (miles)} \times 60}{\text{Rate (MPH)}} = \text{Time (minutes)}$

Density = $\frac{1760 \text{ yards (1 mile)}}{\text{Vehicle gap in yards} + \text{average vehicle length in yards}}$ (round)

Converting from inches to yards = divide by 36 (36 inches in a yard) (round up)

Pass Time (without a time gap) = $\frac{\text{Number of vehicles} \times 60}{\text{Density} \times \text{Rate}}$ = Pass Time (in minutes) (round up)

Density x Rate

Pass Time (with a time gap) = $\frac{\text{Number of vehicles} \times 60}{\text{Density} \times \text{Rate}} + \text{Time Gap} = \text{Pass Time (in minutes)}$ (round up)

PERCENTAGE FOR AXLE WEIGHT DISTRIBUTION

Number of Axles per vehicle	Type of Vehicle	AXLE 1	AXLE 2	AXLE 3	AXLE 4	AXLE 5	AXLE 6
3	1 ¼ TON	.38	.31	.31			
	2 ½ TON	.32	.34	.34			
	5 TON	.26	.38	.38			
	10 TON	.24	.38	.38			
5	SEMITRAILER	.14	.21	.21	.22	.22	
6	SEMITRAILER	.08	.22	.22	.16	.16	.16

PREPARATION OF UNIT SUPPLIES FOR AIR MOVEMENT

Weight and Balance Formula = $\frac{(D1 \times W1) + (D2 \times W2) + (D3 \times W3) \text{ etc}}{\text{Gross Weight}}$ = C/B from RDL
in inches

D = Distance from Reference Datum Line (RDL) to Axle 1, 2, 3 etc

W = Weight of Axle 1, 2, 3 etc

Gross Weight = Sum of W1, W2, W3 etc (sum of all axle weights)

Note: Compute C/B to nearest whole inch

AIR MOVEMENT OF CARGO AND CARGO RESTRAINT

Restraint Formula = $\frac{\text{Restraint Criteria (G)} \times \text{Weight of Item}}{\text{Approximate restraint obtained}}$ = Number of tiedowns required

RESTRAINT CRITERIA	X	WEIGHT OF ITEM	=	REQUIRED RESTRAINT	÷	APPROXIMATE RESTRAINT OBTAINED	=	# OF TIEDOWNS REQUIRED
— — — — —	—	— — — — —	—	— — — — —	—	— — — — —	—	— — — — — ▶

RESTRAINT CRITERIA

FORWARD 3.0

AFT 1.5

LATERAL 1.5

VERTICAL 1.5

IN GENERAL, PROPER APPLICATION OF FORWARD AND AFT RESTRAINT WILL SATISFY LATERAL AND VERTICAL RESTRAINT

APPROXIMATE RESTRAINT OBTAINED:

MB-1 APPLIED AT A 30 X 30 ANGLE = 7500

MB-1 APPLIED AT A 45 X 45 ANGLE = 5000

MB-2 APPLIED AT A 30 X 30 ANGLE = 18750

MB-2 APPLIED AT A 45 X 45 ANGLE = 12500

RESTRAINT EQUIPMENT:**CHAINS AND DEVICES:**

MB-1 = 10,000 LBS

MB-2 = 25,000 LBS

STRAPS:

CGU-1/B = 5,000LBS

Table 2-26. Metric Conversion Table**a. Common Metric Abbreviations**

m = meter; dm = decimeter; cm = centimeter; mi = miles;

kg = kilogram; km = kilometer; t = tonne or metric ton (1000 kg)

b. Liner Conversion Factors

<u>m</u>	<u>In</u>	<u>Ft</u>	<u>Yd</u>
1.0	39.37	3.2808	1.0936
0.0254	1.0	0.0833	0.0278
0.3048	12.0	1.0	0.3333
0.9144	36.0	3.0	1.0

c. Surface Conversion Factors

<u>m²</u>	<u>In²</u>	<u>Ft²</u>	<u>Yd²</u>
1.0	1,550.0	10.764	1.196
0.00064	1.0	0.0069	0.00077
0.0929	144.0	1.0	0.1111
0.8361	1,296.0	9.0	1.0

d. Cubic Conversion Factors

<u>m³</u>	<u>In³</u>	<u>Ft³</u>
1.0	61,023.7	35.31
0.000016	1.0	0.00058
0.02832	1,728.0	1.0

e. Weight Conversion Factors

<u>Kg</u>	<u>Lb</u>	<u>STON</u>
1.0	2.20462 (avdp)	NA
0.45359	1.0	NA
907.18	2,000.0	1.0
1000.0 (t)	2,204.62	1.1

f. Simplified conversion Computation (accurate within 2 percent):

- (1) In to cm – multiply inches (In) by 10 and divide by 4.
- (2) Ft to m – multiply feet (Ft) by 3 and divide by 10.
- (3) Mi to km – multiply miles (mi) by 8 and divide by 5.
- (4) Lb to kg – multiply pounds (Lb) by 5 and divide by 11.

Abbreviations/Acronyms

2D	Two dimensional	AUEL	Automated Unit Equipment List
3D	Three dimensional	BASOPS	Base operations support
AA	Assembly Area	BBM	Blocking and bracing material
AACG	Arrival Airfield Control Group	BBPCM	Blocking, bracing, packing, and crating materials
A/DACG	Arrival/Departure Airfield Control Group	BBPCT	Blocking, bracing, packing, crating, and tie-down
AALPS	Automated Airlift Planning System	BBT	Blocking, bracing, and tie-down
AAR	Association of American Railroads	Bde	Brigade
ABL	Ammunition Basic Load	BDU	Battle Dress Uniform
ABS	Automated Battlebook System	BMC	Brigade Movement Coordinator
AC	Active Component	Bn	Battalion
ACA	Airlift Clearance Authority	BSB	Base Support Battalions
ACL	Allowable Cabin Load	C2	Command and control
A/DACG	Arrival/Departure Airfield Control Group	C3	Command, control, and communications
ADPC	Air Deployment Planning Course	C4I	Command, control, communications, computers and intelligence
AFB	Air Force Base	CAC	Common access card
AFJM	Air Force Joint Manual	CB or C/B	Center-of-balance
AI	Artificial intelligence	CADS	Containerized Ammunition
AIS	Automated Information Systems	CAP	Distribution System
AIT	Automated Identification Technology/Advanced Individual Training	CASCOM	Crisis action planning
ALD	Available-to-Load Date	CBL	Combined Arms Support Command
AMC	Air Mobility Command (Air Force)/Army Material Command	CBRNE	Commercial Bill of Lading
AMCS	Air Mobility Control Squadron	CCCH	Chemical, Biological, Radiological, Nuclear Explosive
AMOG	Air Mobility Operations Group	CCN	Cargo Category and Heavy Lift Codes
AO	Area of Operations	CCN	Convoy Clearance Number
AOC	Area of Concentration	C-DAY	Commence Movement from Origin
AOR	Area of Responsibility	CDE	Chemical decontamination equipment
APA	Army Pre-positioned Afloat	Cdr	commander
APFT	Army Physical Fitness Test	CDRL	contract data requirements list
APL	Army Pre-positioned Land	CDT	Cargo Documentation Team
APOD	Aerial Port of Debarkation	CF	copy furnished
APOE	Aerial Port of Embarkation	CFA	Call forward area
APS	Army Prepositioned Stocks or Aerial Port Squadrons (USAF)	CFM	CONUS freight management
AR	Army Regulation	CFR	Code of Federal Regulations (HAZMAT)
ARFOR	Army Forces	CG	Center-of-gravity
ARNG	Army National Guard	CHE	Container handling equipment
ASCC	Army Service Component Command or Commander	CIF	Central Issue facility
ASG	Area Support Group	CIIP	Clothing initial issue point
ASL	Authorized Stockage List	CINC	commander in chief (the President of the USA)
ASMP	Army Strategic Mobility Program	CJCS	Chairman of the Joint Chiefs of Staff
ASORTS	Army Status of Occupational Readiness and Training System	CJCSI	Chairman of the Joint Chiefs of Staff Instruction
ASP	Ammunition Supply Point	CJCSM	Chairman, Joint Chiefs of Staff Manual
AT	Annual training		
ATCMD	Advanced Transportation Control		

CMO	Convoy Movement Order/Civil-Military Operations	DOD	Department of Defense
CMOS	Cargo Management Operations System	DODAAC	Department of Defense Activity Address Code
Co	Company	DODIC	Department of Defense Identification Code
COA	Course of action	DODX	Department of Defense-owned Railcars
COC	Combat Operations Center	DOL	Director of Logistics
COFC	Container on Flat Car (rail carriage)	DOS	Days of supply
COFS	Chief of Staff	DOT	Department of Transportation
COMASCC	Commander, Army Service Component Command	DPC	Deployment Processing Center
Com'l	Commerical	DPTM	Directorate of Plans, Training and Mobilization
COMPASS	Computerized Movement Planning and Status System	DPW	Directorate of Public Works
COMPES	Contingency Operations/Mobility Planning and Execution System	DRB	Defense Ready Brigade
COMMZ	Communication Zones	DRU	Direct Reporting Unit
CONEX	Container Express	DSB	Deployment Support Brigade (Army Reserve)
CONPLAN	Operation plan in concept format (Concept Plan)	DS	Direct Support
CONUS	Continental United States	DSC	Deployment Support Command
COR	Contracting officer's representative	DSN	Defense Switched Network
COSCOM	Corps Support Command	DST	Deployment Support Team
CP	Check point/critical point/command post	DTO	Division Transportation Officer/Office
CRAF	Civil Reserve Air Fleet	DTR	Defense Transportation Regulation
CRC	CONUS Replacement Center	DTS	Defense Transportation System
CRE	Contingency Response Element	EAC	Echelons above corps (Army)
CROP	Container Roll-In/Roll-Out Platform	EAD	Earliest Arrival Date/Echelons above division (Army)
CS	Combat support	ECS	Engagement control station
CSA	United States Army Chief of Staff	EDI	Electronic data interchange
CSC	Convoy support center	EDRE	Emergency Deployment Readiness Exercise
CSS	Combat service support	EDSS	Equipment Deployment Storage Systems
CSSS	Combat service support system	EEFT	End-to-end force tracking
CTA	Common Table of Allowances	ELIT	Enhanced Logistic Intratheater Support Tool
CTC	Cargo Transfer Company	ERG	Emergency Response Guidebook (HAZMAT)
CTG	Composite Transportation Group	EOC	Emergency Operations Center
CTT	Common task test	EOD	Explosive ordnance disposal
CUL	Common user logistics	ETA	Estimated time of arrival
DA	Department of the Army	ETD	Estimated time of departure
DACG	Departure Airfield Control Group	ETS	End tour of service
DAMMS-R	Department of the Army Movement Management System - Redesign	FAA	Functional area assessment
DCSBOS	Deputy Chief of Staff for Base Operations Support	FAW	Front axle weight
DD	Department of Defense (forms only)	FCDT	Freight Consolidation and Distribution Team
DEL	Deployment Equipment List	FLOGEN	Flow generator
Det	Detachment	FFE	Front forward edge
DFRIF	Defense Freight Railway Interchange Fleet	FM	Field Manual
DLA	Defense Logistics Agency	FMTV	family of medium tactical vehicles
DLAM	Defense Logistics Agency Manual	FOH	Front overhang
DMC	Defense Movement Coordinator		
DOC	Director of Contracting		

FORSCOM	United States Army Forces Command		
FP	Force protection	IPR	Goods Code
FRAGO	Fragmentary Order	IRR	In-process review
GATES	Global Air Transportation Execution System	ISA	Individual Ready Reserve
GBL	Government Bill of Lading	ISB	Installation Staging Area
GCCS	Global Command and Control System	ISO	Intermediate Staging Base
GDSS	Global Decision Support System		International Organization for Standardization
GFM	Global Freight Management	ISSA	Inter-Service Support Agreement
GIS	Graphic Information System	ISU	Internal Aircraft/Helicopter Slingable-Container Unit
GOPAX	Groups Operational Passenger System	ITO	Installation Transportation Office/Officer
GTN	Global Transportation Network	ITV	In-transit visibility
GW	Gross weight	IWS	Information workspace
HAZMAT	Hazardous material	JA/ATT	Joint airborne/air transportability training
HEMTT	Heavy expanded mobility tactical truck	JCS	Joint Chiefs of Staff
HET	Heavy Equipment Transporter	JET	JOPES editing tool
HHC	Headquarters and Headquarters Company	JFAST	Joint Flow and Analysis System for Transportation
HHG	Household goods	JFC	Joint Force Commander
HHI	Hand-held interrogator	JFCOM	Joint Forces Command
HHT	Headquarters and Headquarters Troop	JFRG II	Joint Force Requirements Generator II
HIV	Human Immunodeficiency Virus	JFTR	Joint Federal Travel Regulation
HMMVW	High mobility multipurpose wheeled vehicle	JI	Joint inspection
HN	Host nation	JLOTS	Joint logistics-over-the-shore
HNS	Host nation support	JOPES	Joint Operation Planning and Execution System
HQ	Headquarters	JP	Joint Publication
HS	Home Station	JPEC	Joint Planning and Execution Community
IA	Interface agreements	JPMO	Joint Project Management Office
IATA	International Air Transport Association	JRSOI	Joint reception, staging, onward movement, and integration
IATA DGR	International Air Transport Association Dangerous Goods Regulations	JSCP	Joint Strategic Capabilities Plan
IAW	in accordance with/intermediate axle weight	JTTP	Joint tactics, techniques and procedures
IBCT	Interim Brigade Combat Team	K	thousand
IBS	Integrated Booking System	LAD	Latest Arrival Date
ICAO	International Civil Aviation Organization	LAN	Local Area Network
ICE	Individual Clothing and Equipment	LIN	Line Item Number
ICODES	Integrated Computerized Deployment System	LMSR	Large, medium speed roll-on/roll-off
IC-UMO	Intermediate Command Unit Movement Officer	LOC	Line of Communication
ID	Identification	LOGMARS	Logistics Application Of Automated Marking and Reading Symbols
IMA	Individual mobilization augumentee	LOGMOD	Logistics module
IMDG	International Maritime Dangerous Goods	LOI	Letter of instruction
IMDGC	International Maritime Dangerous	LOLO	Lift-on/lift-off
		LOTS	Logistics-over-the-shore
		MA	Marshaling area
		MACOM	Major Army Command
		MAIRS	Military Airlift Integrated Reporting System

MCC	Movement Control Center	N-Hour	Notification hour
MCE	Movement Control Element		
MCT	Movement Control Team	NHTM	National Highway Transportation Network
MDRD	Mobilization, Deployment, Redeployment, and Demobilization	NLT	Not later than
MEE	Minimum Essential Equipment	NRP	Nonunit-related personnel
METL	Mission Essential Task List	NSN	National Stock Number
METT-T	Mission, Enemy, Terrain, Troops, Time Available and Civilian considerations	NTAT	Not To Accompany Troops
		NTC	National Training Center
METT-TC	Mission, Enemy, Terrain, Troops and Time Available	NVG	Night vision goggles
		OCIE	Organizational Clothing And Individual Equipment
MHE	Materiel handling equipment	OCONUS	Outside the Continental United States
MI	Middle initial		
Misc	Miscellaneous	ODEE	Operations, deployment, employment, execution
MILVAN	Military-Owned Shipping Container (20 foot length)	OEL	Organization Equipment List
MILSTAMP	Military Standard Transportation and Movement Procedures	OIC	Officer in charge
		OJT	On-the-job training
MO	Movement Order	OPCON	Operational Control
Mob	Mobilization	OPLAN	Operation Plan
MOB/ODEE	Mobilization, operations, deployment, employment and execution	OPORD	Operation Order
		OPP	Off-load preparation party
MOBCON	Mobilization Control	OPSEC	Operations security
MOS	Military Occupation Specialty	OVE	On vehicle equipment
MOOTW	Military operations other than war	PAX	Passenger
MPE	Mode to Port of Embarkation	PBO	Property Book Officer
MPH	Miles-per-hour	PC	Personal computer
MRC	Major regional conflict	PCS	Permanent change of station
MRE	Meal, ready to eat	PDF	Portable data file
MRX	Mission rehearsal exercises	PG	Packing Group (HAZMAT)
MS	Mobilization Station/Site	PLL	Prescribed Load List
MSC	Military Sealift Command	PLS	Palletized Load System
MSL	Military Shipping Label	PMCS	Preventative Maintenance Checks and Services
MSR	Main Supply Route	POC	Point of contact/Port Operations Center
MST	Mission Support Team		
MTF	Medical treatment facility	POD	Port Of Debarkation
MTMC	Military Traffic Management Command (see SDDC)	POE	Port Of Embarkation
		POL	Petroleum, oils and lubricants
MTMCTEA	Military Traffic Management Command Transportation Engineering Agency	POM	Preparation for overseas movement
		POP	Performance orientated packaging
		POV	Privately owned vehicle
MTOE	Modified Table of Organization and Equipment	PPP	Power Projection Platform
		PSA	Port Support Activity
MTON	Measurement Ton	PSP	Power Support Platform
MTS	Movement Tracking System	PSRC	Presidential Selective Reserve Callup
MTW	Major theater war		
MWO	Mobility Warrant Officer	Pub	Publication
NA or N/A	Not applicable	Qty	Quantity
NAT	Not air transportable (cargo)	QUADCON	Quadruple container
NBC	Nuclear, biological, and chemical	RAA	Redeployment Assembly Area/Rear Assembly Area
NCO	Noncommissioned officer		
NCOIC	Noncommissioned officer in charge	RAW	Rear axle weight
NEW	Net explosive weight	RC	Reserve Components (ARNG and

	USAR)	STON	Short Tons (2,000 pounds)
RDD	Required Delivery Date	SUN	Shipment Unit Number
RDL	Reference datum line	TACC	Tanker Airlift Control Center
RF	Radio frequency	TALCE	Tanker Airlift Control Element
RF-AIT	Radio Frequency - Automatic Identification Technology	TAA	Tactical Assembly Area
RLD	Ready-to-load date	TAT	To Accompany Troops
RO/RO	Roll-on/roll-off (type of ship)	TAV	Total Asset Visibility
RP	Release Point	TB	Technical Bulletin
Rr	Railroad		
RSC	Regional Support Command (Army Reserve)	TC-ACCIS	Transportation Coordinator Automated Command and Control Information System
RSO&I	Reception, Staging, Onward Movement and Integration	TC-AIMS II	Transportation Coordinators' Automated Information for Movement System II
RSOP	Readiness, standard operating procedures	TCC	Transportation Component Command
S-3	Operations Officer	TCC	Type Cargo Code
S-4	Logistics Officer	TCE	Transportation Control/Command Element
SA	Staging area	TCMD	Transportation Control and Movement Document
SAAM	Special Assignment Airlift Mission	TCN	Transportation Control Number
SAMS	Standard Army Maintenance System	TCP	Traffic Control Point
SARSS	Standard Army Retail Supply System	TCS	Temporary Change Of Station
SDDC	Surface Deployment & Distribution Command	TDA	Table of Distribution and Allowance
	Secretary of Defense	TE	Type Equipment (Code)
SECDEF		TM	Technical Manual
SEDRE	Sealift Emergency Deployment Readiness Exercise	TMP	Transportation motor pool
SF	Standard form	TOE	Table of Organization and Equipment
SHC	Special Handling Code	TOFC	Trailer on Flat Car (rail carriage)
SI	Support Installation	TPC	Type Pack Code
SIDPERS-3	Standard Installation/Division Personnel System	TPFDD	Time-Phased Force Deployment Data
SLRP	Survey, Liaison, Reconnaissance Party	TPFL	Time-Phased Forces and Deployment List
SOFA	Status-of-Force Agreement	TRADOC	United States Army Training and Doctrine Command
SMCC	State Movement Control Center (National Guard)	TRAMS	Transportation Automated Measurement System
SNCO	Senior Non-Commissioned Officer	TRICON	Triple container
SOP	Standard operating procedures	Trml	Terminal
SORTS	Status of Resources Training System	TSB	Theater Staging Base
SRP	Soldier Readiness Processing	TSC	Theater Support Command
SP	Start Point	TTB	Transportation Terminal Brigade/Battalion
SPBS-R	Standard Property Book System-Redesign	TTP	Tactics, techniques and procedures
SPOD	Seaport of debarkation	TTU	Transportation terminal unit
SPOE	Seaport of embarkation	TUCHA	Type unit characteristics
SRP	Soldier readiness processing	TUDET	Type Unit Equipment Detail File
SSA	Supply support activity	UBL	Unit Basic Load
SSC	Small scale contingency	UCMJ	Uniform Code of Military Justice
SSN	Social Security Number	UDL	Unit Deployment List
STARC	State Area Command (National Guard)	UIC	Unit Identification Code

ULL	Unit level logistics
ULN	Unit Line Number
UMC	Unit Movement Coordinator
UMD	Unit Movement Data
UMO	Unit Movement Officer
UMODPC	Unit Movement Officer Deployment Planning Course
UMT	Unit Movement Team (Army Reserve)
UN	United Nations
U.S.	United States
USAF	United States Air Force
USAR	United States Army Reserve
USARC	United States Army Reserve Command
USAREUR	United States Army - Europe
USCG	United States Coast Guard
USDA	United States Department of Agriculture
USMC	United States Marine Corps
USR	Unit Status Report
USTRANSCOM	United States Transportation Command
UTC	Unit Type Code
WAN	Wide Area Network
WARNORD	Warning Order
WB	Wheel base
WCC	Water Commodity Code
WETS	Week-end training site
WPS	Worldwide Port System

USEFUL WEBSITES

Air Mobility Command Factsheets

<http://public.amc.af.mil/Library/Factsheets/factsheets.htm>

Commanders Guide to Strategic Deployment

<http://www.transchool.eustis.army.mil/CDR/>

Defense Transportation Regulations

<http://www.transcom.mil/j5/pt/dtr.html>

Division Transportation Officer's Guide

<http://www.transchool.eustis.army.mil/DTO/>

Field Manuals

<http://atiam.train.army.mil/portal/application?origin=rdlservices.jsp&event=bea.portal.framework.internal.refresh&pageid=RDL%20Services&action=search>

FORMS

Department of the Army Forms (DA):

http://www.usapa.army.mil/USAPA_PUB_search_F.asp

Department of Defense Forms (DD):

<http://www.dtic.mil/whs/directives/infomgt/forms/formsprogram.htm>

FORSCOM Forms:

<http://www.forscom.army.mil/forms/formlist.htm>

FORSCOM Regulations

http://www.forscom.army.mil/pubs/PUBS/2530/SEC1-7_1.HTM

Global Transportation Network

<https://www.gtn.transcom.mil/index.jsp>

STEP 1: Select the 'Training' option on the GTN homepage (note to access the training module on-line you need a GTN user account and password).

SDDCTEA Pams

<http://www.tea.army.mil/pubs/default.asp>

Note: You will need a SDDC TEA user account and password to access some of these publications.

USTRANSCOM Pams

http://www.transcom.mil/J6/j6o/j6_oi/handbook.html

Air Mobility Command

<http://public.amc.af.mil/index.html>

Department of Defense (DoD) graphics

http://www.defenselink.mil/multimedia/web_graphics/

Defense Almanac (U.S)

<http://www.defenselink.mil/pubs/almanac/index.html>

Family of Medium Tactical Vehicles (Project Office)

<http://peocscss.tacom.army.mil/pmMTV.html>

Military Sealift Command

<http://www.msc.navy.mil/>

Military Sealift Command Factsheets/Ship Inventory

<http://www.msc.navy.mil/factsheet/> and

<http://www.msc.navy.mil/inventory>

Military Surface Deployment and Distribution Command

<http://www.mtmc.army.mil/>

Military Surface Deployment and Distribution Command Transportation Engineering Agency

<http://www.tea.army.mil/>

Official U.S. Time

<http://nist.time.gov/>

U.S. Army

<http://www.army.mil/>

U.S. Army Center for Military History

<http://www.army.mil/cmh-pg/>

U.S. Army Forces Command (FORSCOM)

<http://www.forscom.army.mil/>

U.S. Army Objective Force

<http://www.army.mil/armyvision/default.htm>

U.S. Army Transportation Center, Fort Eustis, VA

<http://www.eustis.army.mil/>

U.S. Army Transportation School, Fort Eustis, VA

<http://www.transchool.eustis.army.mil/>

Unit Movement officer Deployment Planning Course (UMODPC) (U.S. Army Transportation School)

<http://www.transchool.eustis.army.mil/UMOD/default.htm>

U.S. Coast Guard

<http://www.uscg.mil/>

U.S. Transportation Command (USTRANSCOM)

<http://www.transcom.mil/>

READING ADOBE ACROBAT FILES

- To read files ending with a 'PDF' extension you will need to download a copy of 'Adobe Acrobat' reader
- A free download of the necessary software is available at:

<http://www.adobe.com/products/acrobat/readstep2.html>